Smithsonian

December 1989

As Christmas nears, toy makers battle for the hearts and minds of young consumers (p. 72); here, the ever-popular Barbie dolls reflect 31 years of changing roles and fashions

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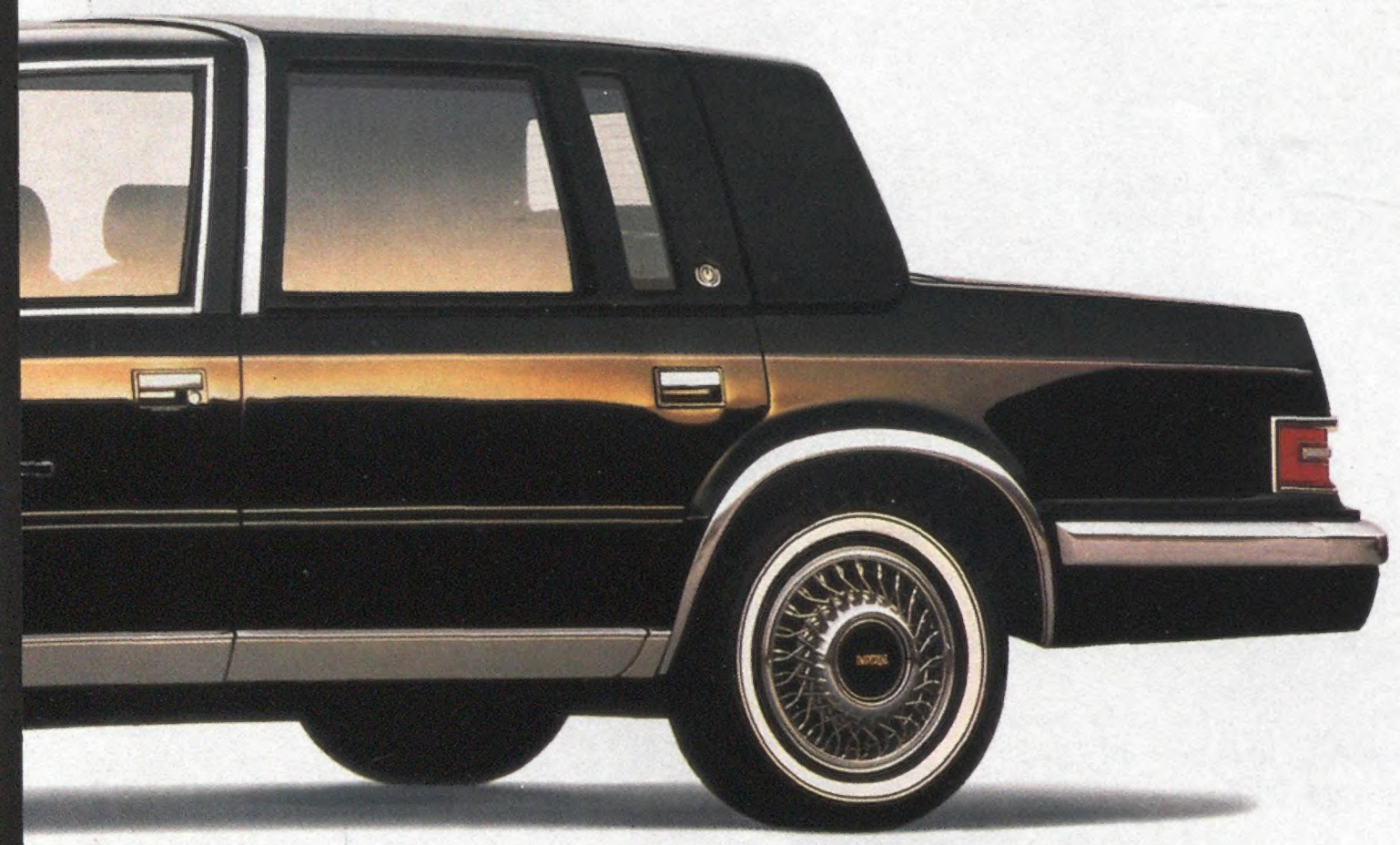

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December 1989

Smithsonian

Volume 20, Number 9

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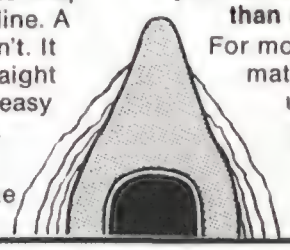

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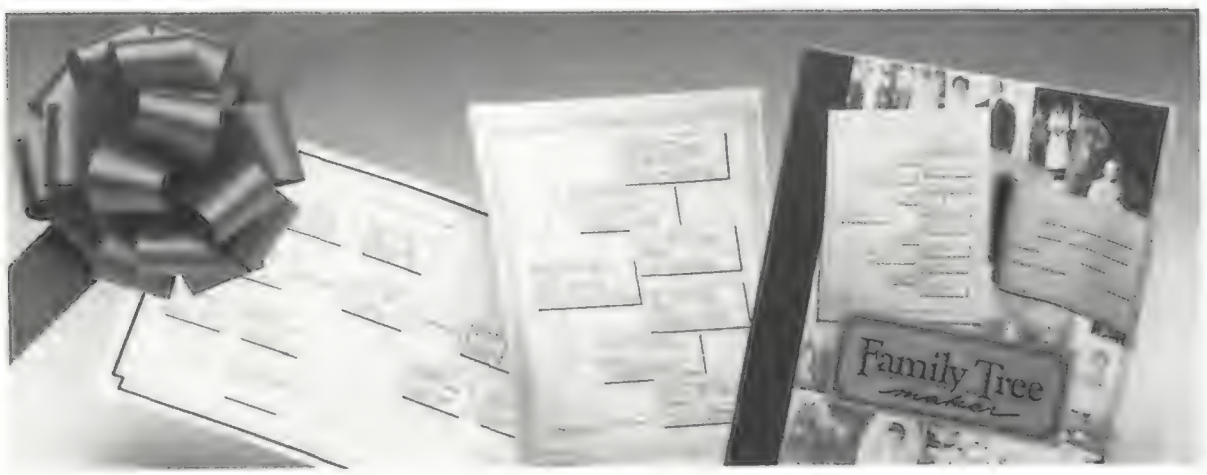

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Secretary Adams' comments

Smithsonian horizons

Ignored by the Nobels, engineering and technology are at last being honored by a significant new prize

Scientific prizes, the Nobel awards in particular, make a defining and profoundly supportive contribution to the tide of scientific discovery. They designate what thenceforth become universally recognized markers in an otherwise fluid, fragmented, disputatious and endless advance toward goals that never can be more than provisionally set—and that always recede.

By recognizing originality, independence and consistency of effort as well as the significance of the finding, Nobel Prizes establish these as qualities to strive for. Permanently anointed, the awardees are freed to strike out in risky new directions and enabled to attract a critical mass of younger, creative intellects to work with them. But while the act of awarding prizes draws honor to a field, it does not mean that contributions in fields that have attracted fewer such honors are necessarily inferior in quality or importance.

It is gratifying to report that one persistent imbalance in this respect is finally being corrected. A prize of a magnitude equivalent to the Nobels has recently been established to honor achievements in engineering and technology.

"Our society tends to reward the discoverer of basic scientific principles but overlook the engineer who puts that principle into practice in products and services that yield societal and economic benefits," commented Robert M. White, president of the National Academy of Engineering, under whose auspices the awards will henceforth be made biennially. They have been named after, and endowed by the laboratory of, the late Charles S. Draper, who pioneered in developing inertial guidance systems to determine the position of aircraft, spacecraft, ballistic missiles and submarines without outside reference points.

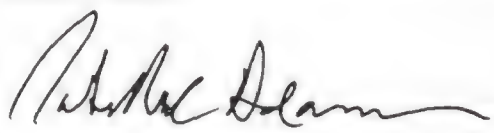
In October announcement was made of the first award, whose recipients were unanimously chosen by a committee of prominent engineers in the academy. It will be given in February to Robert N. Noyce and Jack S. Kilby, independent coinventors of the integrated circuit, or semiconductor microchip, who went on separately to develop its successful commercial production and application. Through techniques incorporating photographic processes similar to those used in lithography, formerly discrete electronic components are combined on a single silicon crystal. With further refinements being introduced at an unprecedented rate, processing capacity has doubled about every three years since the late 1950s. At this point, literally millions of transistors, resistors and capacitors can be imprinted on a crystal smaller than a child's fingernail.

That these inventors made a societal as well as a technical contribution equivalent to those of Nobel honorees is beyond debate. The introduction of microchips was the single most important step in ushering in the Information Age. By enormously extending capabilities for storing and manipulating information in a very small space, the microchip has been fundamental not only to explosive advances in computing power but to consumer products such as pocket calculators, digital watches, videocassette recorders and compact disks. Its almost immeasurable impact on our lives, transforming banking, transportation, communications and other industries, is the fitting subject of a major exhibition that will open at the National Museum of American History in the spring.

Not surprisingly, both of the prizewinners are holders of many other patents. Noyce was trained at MIT in physical electronics, while Kilby is an electrical engineer who reportedly will not wear a digital watch and still keeps his K&E Log-Log Decitrig slide rule handy. At the time of the invention they were, respectively, a founder of Fairchild Semiconductor and an employee of Texas Instruments, both struggling with seemingly insoluble problems of microminiaturization.

Noyce arrived at the concept of the microchip by first recognizing the possibility of imprinting metal interconnections on a silicon chip, while Kilby first saw that the silicon itself could be made to serve, imperfectly but adequately, as different kinds of electronic components. Some years of legal infighting between their firms intervened, but ultimately cross-licensing arrangements were agreed upon and the joint contributions of both inventors were recognized. Noyce is today the president and CEO of Sematech, in Austin, Texas, while Kilby is an independent consultant in Dallas and chief technical officer for the Houston Area Research Center.

Technology is the deliberate manipulation and alteration of the material world to attain some objective of social or economic utility. Science, by contrast, reflects a prevailing concern for more general levels of discovery and explanation. For the most part, the two interact in close understanding and harmony. Better late than never, we now acknowledge that, as we need both, we must honor both.



Nobody can steal the thunder of the engineers who created the amazing Mercedes-Benz 300E.

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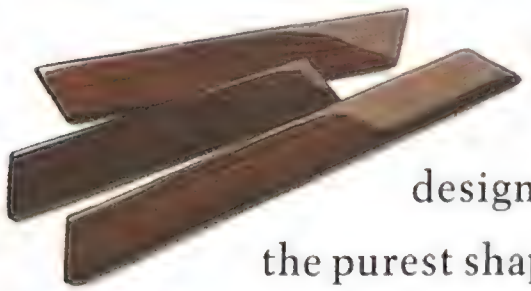
The engineers of Mercedes-Benz view the refinements made to their beloved 300E Sedan for 1990 with decidedly mixed emotions.



Granted, the designers have honed the purest shape ever given to a high-performance sedan into an even purer form.

And not even a Mercedes-Benz engineer can argue against raising the 300E's interior standard of living to match its exalted standard of driving.

Which the designers have done. By making butter-soft glove leather upholstery standard. Wrapping the steering wheel in leather. Trimming

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None of which, the engineers insist, will ever compete with the 300E's performance as a reason to buy.

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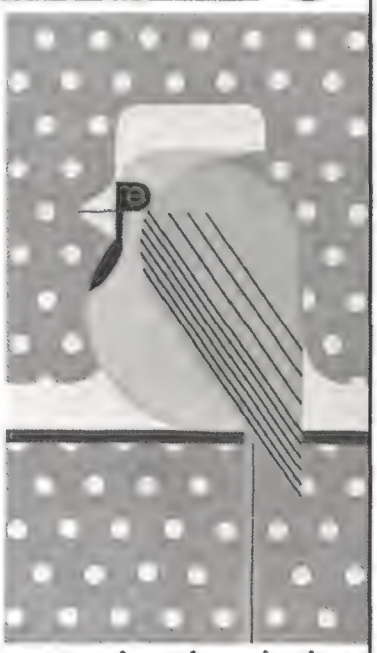

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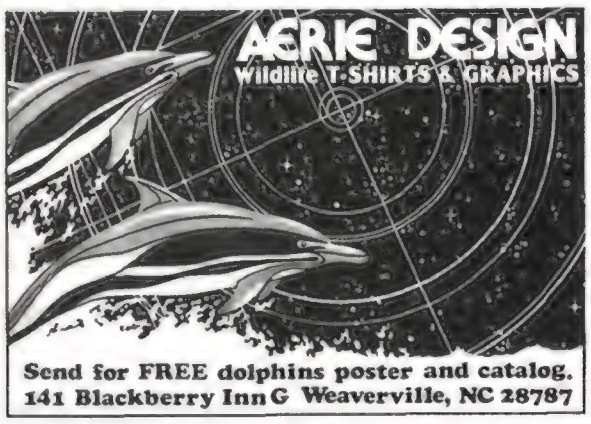

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Letters to the Editor

Swiss Army Knife

Dear Sir: One remarkable feature of these knives, whether a Wenger or a Victorinox, is their ability to disappear! On several occasions I've had to question friends who failed to return a borrowed blade. Maybe a sonic locator embedded in the handle would avoid embarrassing confrontations with those Chaucer might have described as the "smylere with the knyf under the cloke"!

Patrick B. McGarry
Springfield, Illinois

Dear Sir: In 1981 I gave each of my groomsmen an engraved "Genuine" SAK. A little research has revealed that all seven knives are in regular working order. Alas, marriages of three of the recipients (and mine) proved less durable.
Alexander S. Ash
Dallas

Dear Sir: Man and boy, for decades I carried a SAK on forays in various obscure regions of the world.

A few years ago, as I transited Tokyo's Narita airport, security personnel, without explanation, confiscated the knife from my briefcase. I was escorted under brisk physical restraint to the departure gate, where my packaged knife was turned over to the flight attendants, as alarmed as were my fellow passengers by my seemingly threatening status. Fortunately, I reclaimed my knife at Singapore without hassle.

Having forgotten the incident, I again transited Narita this summer. I was suddenly braced against a wall by two husky young security women demanding to know why I was carrying a

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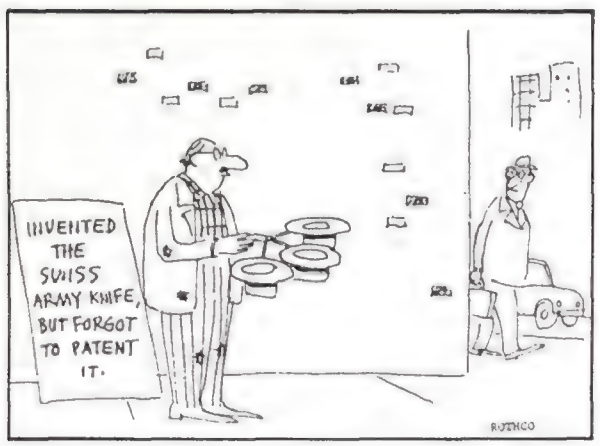
weapon. Again, my knife was packaged and I was escorted to the gate, with minimal finesse. While my luggage made it onto my flight, as presumably did my knife, I was left behind, to wait six hours for the next connection. I was never to see my knife again.
Frank Tatu
Washington, D.C.

Dear Sir: To Page and Hoffman's account of this remarkable tool, I would like to add *Punch*'s cartoon [below].
Thomas E. Zmudzinski
Fort Washington, Maryland



Dear Sir: After years of hinting and asking for a SAK for my birthday or for Christmas, I am finally going to be presented with a Victorinox!

Purposefully guiding my man to a store counter, I pointed to the knife and told him "There's what I want for Christmas." Glory be! Come Christmas Day there will be one happy old lady at our house who finally will have her own original Swiss Army Knife. I can't wait!
Mrs. Lewis R. Prosser
Shreveport, Louisiana

Dear Sir: In 1982, 400 miles south of the Orinoco, on the savannah beside an Indian village, my son found that he had lost the key to his lightplane, a Cessna 170. He managed to unlock the door—no particular achievement—and also to start the engine with his mother's Swiss Army Knife.
Constance Reid
San Francisco

Dear Sir: I am a freshman at Arizona State University and when my father gave me a Swiss Army Knife I was disappointed that I could not return it for a sweater. Now that I am living in a dorm with 80 other girls, being the only one with a screwdriver has made me very popular. I have learned that a Swiss Army Knife is a much better gift than a sweater. And just to rub it in, my father sent me your article with a note saying, "And you thought it was a dumb gift."
Megan Shoemaker
Tempe, Arizona

Dear Sir: I am a carpenter by trade and a musician by hobby. I am also a devotee of the *original* Swiss Army Knife (Victorinox "Champion") and, thank you, I'd rather fight than switch!

I discovered quite by accident that its tweezers, good for extracting the manifold splinters I accumulate in my trade, also double as a tuning fork for my hobby. Simply grasp the tweezers at their base with thumb and forefinger, insert the pinky of the same hand gently into your ear, then pluck the tweezers with the opposite hand. The note "C" will resonate clearly in your ear!
Marc J. Cooper
New Orleans

Independent research shows:
NordicTrack preferred six to one over bikes and rowers

In 1988 Burke Marketing Research conducted a survey among NordicTrack owners who also own exercise bicycles and rowing machines. Their findings showed that by a margin of 6 to 1, respondents prefer their NordicTracks.

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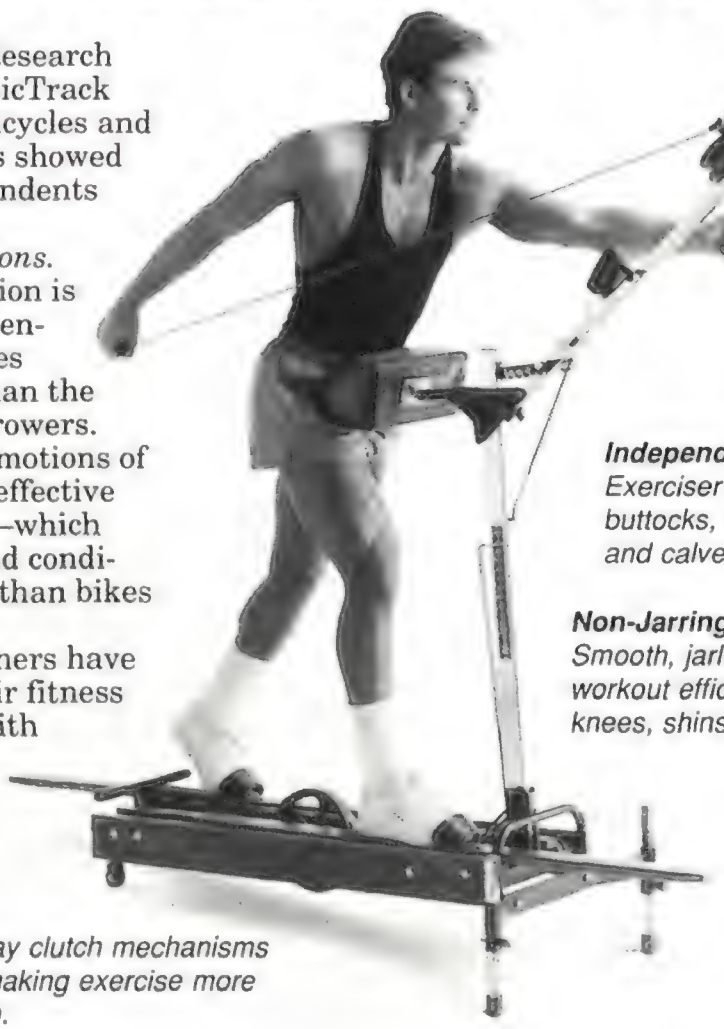
All of which means that owners have found that they can achieve their fitness goals more quickly and easily with NordicTrack than with bikes and rowers, and without risk of injury.



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Frederic Church

Dear Sir: Mark Twain viewed *The Heart of the Andes*, accompanied by his sister Pamela, in St. Louis, not in New York.

He described it in great detail in a letter sent from St. Louis on March 18, 1861, to his brother Orion in Keokuk, Iowa. Twain viewed it several times and even took an opera glass so that he could study it minutely. "It is in my mind now," he wrote his brother, "—and the smallest feature could not be removed without my detecting it."

Mack Hitch
Tucson

Sea gulls

Dear Sir: Your article gave the impression that gulls aren't very bright. That's perhaps true of Eastern gulls, but we have evolving ones in the West. Washington's Longview Park on Lake Sacajawaea attracts ducks, geese, gulls and people. One day I came upon a scattering of gulls, chatting. Trudging downslope toward the nearest group was a determined-looking fellow, a giant maple leaf clinched in his beak, with the greater part dragging over the grass. He stopped, approached another gull and suddenly attacked it with the leaf. That wasn't very effective. Appearing to consider this, the antagonist flew at his victim. The more orthodox method worked and drove the other gull away.

I consider this interest in weaponry proof of intelligence.

T. M. Dobratz
Kalama, Washington

Nuclear disposal

Dear Sir: As a former professor and a scientist currently at Hanford with 24 years' experience in the industry, I found your article to be misleading. Describing Hanford with terms such as "a barren landscape of hidden contamination" or "gray-green scrubby flatland" doesn't begin to portray our world. There are about 230 types of flowering plants, dozens of types of wildlife, nearly 50 types of fish in the drinkable Columbia River, and increasing populations of bald eagles, salmon and geese, despite their being in a desert setting.

Spent fuel [from nuclear-power generation] is not a waste. A single spent fuel assembly can contain the energy equivalent of as much as 90,000 barrels of oil, and more than 5 million barrels if we include the energy extractable from a breeder reactor. Burying the material is an international disgrace, especially with domestic oil shortages on the horizon.

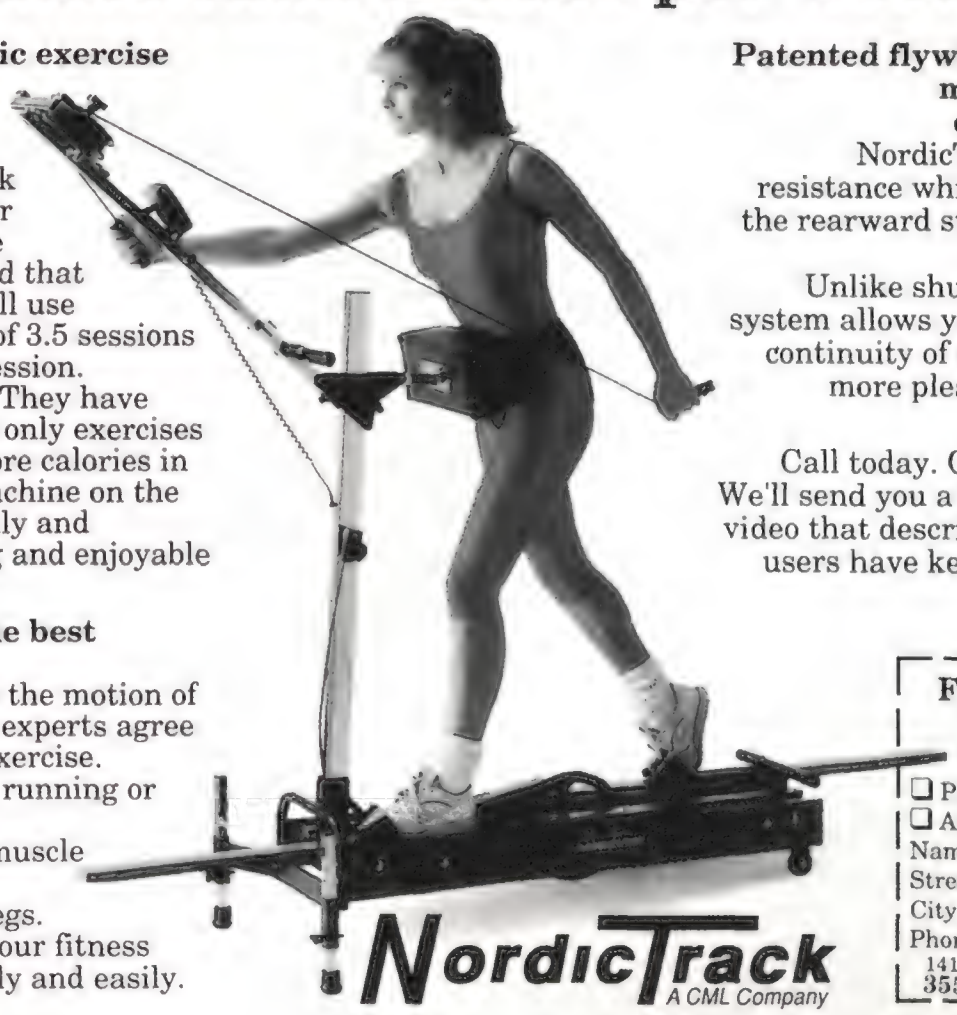
The author is incorrect in stating the $57 billion Hanford cleanup costs being imposed on a substantially safe industry reflect the amount of waste involved. The cleanup could easily be achieved without such spectacular public fleecing. Lawyers, activists and their captive Congressmen are calling the scientific shots, and sending the unsuspecting taxpayers the bill.

Michael R. Fox
Richland, Washington

Dear Sir: Today, nuclear-generated electricity accounts for about 20 percent of our consumption, second only to coal. Unlike coal, it produces no acid rain or greenhouse gases. The American public seems to be getting this message, with

Amazing results:

After five years, 7 out of 10 NordicTrack owners still use their machines more than 3 times per week



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recent polls indicating that about 80 percent believe nuclear power "should" be a part of our energy future. This is a far cry from the impression that Shulman's article conveys of a public opposed to all things nuclear.

Theodore M. Besmann
Oak Ridge, Tennessee

Dear Sir: The peaceful use of nuclear power has never frightened me, but I have always wondered about the waste it leaves behind.

The $98 million funeral for the Shippingport reactor was incredible. Talk about *Nightmare on Elm Street.* Does anyone really believe we can afford multimillion-dollar funerals for the other 500 reactors in use worldwide?

Richard J. Eldred
Andover, Massachusetts

Glasgow

Dear Sir: Although popular support for Glasgow's beautification was intense in 1968, many efforts began as early as the 1930s. The City Council was not only razing blocks of buildings but cutting down significant numbers of trees. Concerned about this loss, my grandmother Clara Lois Jarvis founded the Glasgow Tree Lover's Society. She and a handful of determined friends began a modest beautification project that transformed barren lots into community gardens filled with trees and flowers. All funding and labor were donated by private citizens—not easy, since the city was in deep depression.

In the '70s, Glasgow hired a progressive director of parks who was able to create one of the most successful municipal reforestation projects in the world. Last year, more than 100,000 trees were planted, a project considered a model for other cities.

Virginia Jarvis Whelan
Merion, Pennsylvania

Bonsai

Dear Sir: I am dismayed to see the collecting of "naturally bonsaied" trees from the wild. If such specimens can be sold on a world market for thousands of dollars, what will prevent any number of would-be bonsai artists from wrenching these venerable survivors from their crevices by the tens of thousands?

Prohibiting collecting in parks, which represent only a fraction of public land, or requiring permission and $3-5 per tree, will certainly not discourage this new breed of fortune hunter. In a world of vanishing natural landscapes, any wild collecting is destructive, whether it be for tropical birds, ivory, cacti, or for these gnarled patriarchs of the mountains.

The enlightened hunter of the 21st century goes armed with a camera, not a crowbar!

Ellen Drell
Willits, California

Dear Sir: As an admirer and longtime observer of the venerable bristlecone, I was honored to receive one of these tough and rugged pine bonsai trees as a gift. Since bristlecones are one of the oldest living things on this North American continent, I hope my gnarled, twisted treasure can achieve a few more hundred years, so it can be passed along as a gift of beauty to enrich our grandchildren's and their descendants' lives.

Right now this interesting, unique and graceful bristlecone is thriving in a natural outdoor environment on our front porch, where it is enjoyed and admired by all who see it.

Lucille G. Barton
Clinton, Utah

Dear Sir: Your readers might like to know of a recently released book entitled *Classic Bonsai of Japan,* published by Kodansha International of New York and Tokyo. It was compiled from a 12-volume series published in Japanese for collectors and specialists—a series seven years in the making.

The plates, some of which appeared in your article, include specimens of bonsai cultivated in Japan's Imperial Gardens over several generations, as well as bonsai bearing the touch of different masters throughout history. With an introduction by America's foremost bonsai master, John Y. Naka, it is equivalent to a guided tour of Japan's classic horticultural art form.

Chase Rosade
Rosade Bonsai Studio
New Hope, Pennsylvania

Dear Sir: Collecting is a centuries-old part of bonsai, but strict rules must be followed: do not trespass on private property and of course obtain permission from the landowner or from the Forest Service or BLM.

Above all, a tree should not be collected unless it's a safe bet it will survive. Judging this, and knowing proper collecting techniques, are not for ama-

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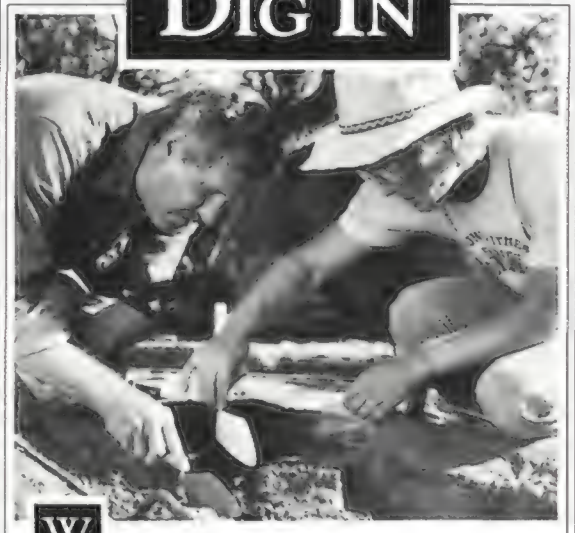

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Felix B. Laughlin
Washington, D.C.

Canaletto

Dear Sir: Warsaw was 85 percent destroyed in World War II, yet the Old Town has been so faithfully restored it appears centuries old. We were told the rebuilders followed "more than 50 paintings by Canaletto"—not Antonio, but his nephew and pupil Bernardo Bellotto. Known as Canaletto the Younger, he was court painter to Stanislaw II. It's nice to know that, through his protégé, Antonio helped Warsaw rise from the ashes.

Richard L. Scheidker
Sarasota

Millard Fillmore

Dear Sir: President Fillmore was a successful lawyer. As a statesman, he refused to "yield a right . . . guaranteed by the Constitution." He helped eliminate debtors prison, instigated a protective tariff and the building of roads, railroads and canals for a strong transportation system. The White House inaugurated its first library during his Administration.

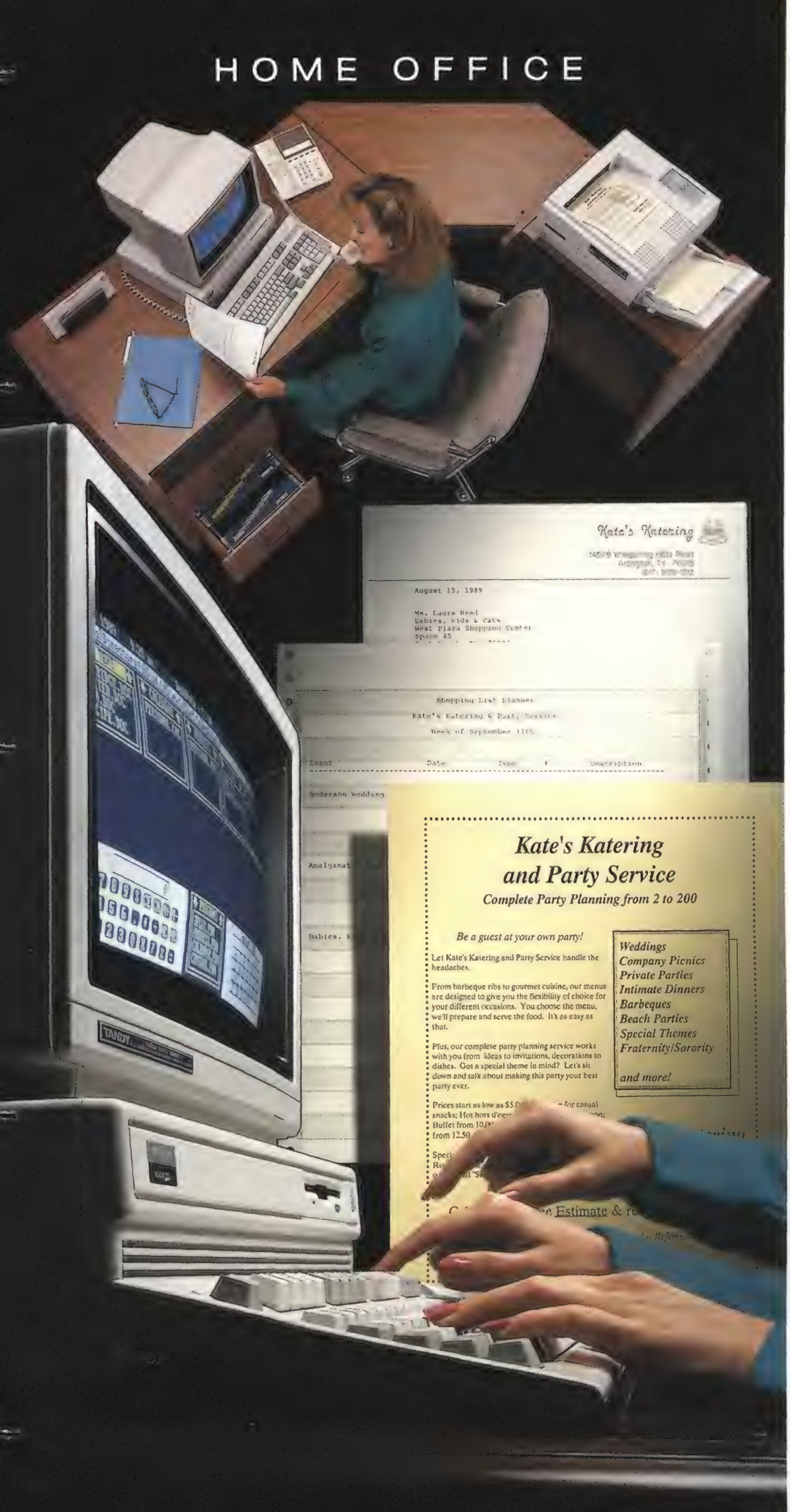
As a founding father of Buffalo, he steered growth and development in health, education and cultural enrichment. He was the organizational power behind the University of Buffalo and its medical school, the Fine Arts Academy (now the Albright-Knox), the Museum of Science, the Buffalo Club, the Buffalo and Erie County Historical Society.

In addition, Queen Victoria thought President Fillmore the handsomest man she ever met.

Dorothea E. Underwood
East Aurora, New York

Dear Sir: During Richard Nixon's run for reelection I had a bumper sticker on my pickup that read, "Time to reelect Millard Fillmore"—in a sense incorrect, as Fillmore was never "elected" President. The bumper sticker elicited much horn blowing and many smiles and thumbs-up signs from passing motorists. Many people wanted one, but I had made it myself.

Edward Lace
South Holland, Illinois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air conditioning and power windows. There's even an available compact disc player and a nine speaker JBL sound system.

Ford Thunderbird SC. Parking is such sweet sorrow.

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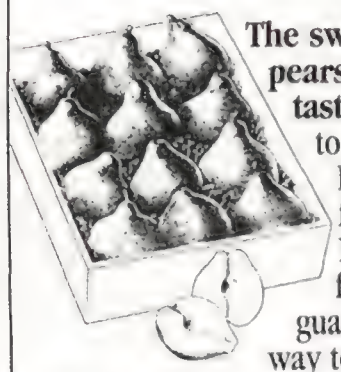

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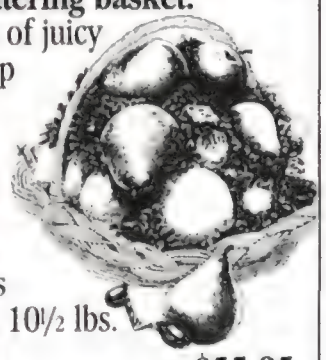

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Around the Mall and beyond

Writer Robert Wernick has made an astonishing variety of subjects his own.

Robert Wernick's article about the South Sea Bubble (see page 155) arrived in my studio on the very day this past October when the stock market took a dramatic dive. That's at least the second such serendipitous score for Wernick. Faithful readers may remember that in September 1986, his article on history's earliest summit meetings came out just before President Ronald Reagan and General Secretary Mikhail Gorbachev were to hold their less-than-successful summit in Reykjavík.

Perhaps Wernick nurtures a weird journalistic sixth sense. More likely, he hits the jackpot so often because he plays so often. For this month's Wernick article is the 50th by this remarkable writer to be published in SMITHSONIAN.

And even in a magazine that aims at a range of interests at least as wide as those of the parent Institution, with its 20-odd museums and research facilities around and sometimes far beyond the Mall, the variety of subjects that Wernick has made his own is astonishing. As his score approached 50, I went back over a batch of old SMITHSONIANS and recalled how often, through the years, we had all been surprised and delighted by Wernick pieces.

I've used pepper all my civilized life, but never until February 1984, when Wernick explained it, had I appreciated the fact that the search for pepper stirred more far-flung exploration even than the search for gold. Rodin's sculpture looms large at the Hirshhorn, and I've described it frequently in books and articles. But I'd never heard of Rodin's mistress Camille Claudel—beautiful, talented, mercilessly debased—until Wernick introduced me to her, in his unforgettably melancholy portrait, in September 1985. I'd heard of El Escorial, but thought maybe it was a Kentucky Derby winner, until exactly two years ago when we published Wernick's article. I learned then that this looming architectural tour de force was inextricably linked to the fate and character of Spain's Philip II.

And the same illumination swept me when, just in this past year, I read about Goya, in January, and about nightmares (without benefit of Freud), two months later. Sure, I was perfectly familiar with the former's name, and I've occasionally had the latter. But Goya's continual swing from court painter to political idealist whose savage drawings reflected "snarling rage" at privileged despotism showed a courage I had not expected. As to Wernick's point that something called "night terrors" can be even more frightening than nightmares but are "seldom of serious consequence"? Gee, I certainly didn't know that.

As a writer, Wernick flips easily from goats to ancient Druids, from Roquefort cheese to the University of Texas. He is a skillful novelist turned journalist, with such a rich store of knowledge that he can cope with all manner of expert knowledge (and all manner of experts), making almost any subject his own. But not as most other journalists do. I, for one, feel I am merely a momentary expert, suddenly amassing piles of specialized information, disgorging it on paper, then forgetting it in the rush to soak up the facts of another. Wernick does the same—except for the forgetting. He seems never to forget anything, putting to service in a dis-

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tinctive, highly allusive prose all sorts of ideas and connections that would probably not occur to the rest of us.

This is true even of his letters. Here are a couple of excerpts from a letter he dashed off to one of our editors, who had suggested that he look into the possibilities of a story on the fantastic popularity of Aleksandr Sergeyevich Pushkin, Russia's greatest poet. "As for Pushkin, I could write you a pretty amusing piece right now, beginning with the competition for a Pushkin memorial in the '30s, when all the sculptors came up with their suggestions, Pushkin reading, Pushkin writing, Pushkin dreaming, and the final choice was Stalin reading Pushkin. . . . every Russian I have ever met knows at least some Pushkin by heart. And phrases like 'only in Shakespeare and in Pushkin' come naturally to everyone from Vladimir Nabokov to Intourist clerks."

To continue revealing this letter would steal Wernick's show. (Watch for the article, folks.) But this much helps us form a picture of a writer who has a memorable way with unexpected facts and with funny, revealing anecdotes.

In his French Revolution piece in July 1989 on Philippe d'Orléans ("Philippe Egalité"), the turncoat cousin of Louis XVI, Wernick takes typical pleasure in the tasty, well-remembered tidbit that Philippe's father, known as "the Fat," once ate "27 partridges at a sitting."

Writing about the despicable Major Esterhazy of the Dreyfus Affair in the following issue, Wernick manages to keep a lengthy series of outlandish characters cleanly separated and distinct: Esterhazy himself, as well as Lieut. Col. Maximilien von Schwartzkoppen, Madame Bastian, Col. Alessandro Panizzardi and Alphonse Bertillon, the mad expert who fiddled with "elaborate charts and diagrams to demonstrate that a diabolically clever Captain Dreyfus had actually *forged* his own handwriting."

Such narrative skills are vital ingredients for SMITHSONIAN articles. Starting at the magazine's birth, 20 years ago next April, one of the things we've tried to do is to make history real to modern readers, and to show how modern ideas and inventions are linked with the past. Look up that story on summit meetings, and take note of the description of the Crusaders in the Holy Land, "marching and fighting under the blaze of the summer sun, broiling beneath the heavy metal armor that covered them, maddened by fleas and lice and mosquitoes

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they could not reach with their gauntleted hands." Then read about armor on page 116 of this issue to see how the description rings true.

A good writer is, above all, a voice, a distinctive voice that we recognize instantly, and sometimes a voice that can sound in the heart of memory. Bob Wernick is such a writer. Readers appreciate that kind of talent. So do editors. Many SMITHSONIAN editors are also writers themselves, and sometimes they weary of the cutting and shaping of other people's prose. But, one told me, on learning I was doing this piece, "Wernick's stuff is so good, and usually so much fun, the work is a pleasure."

Wernick comes up with most of his story ideas himself, but is affable about our suggestions. He usually writes about Europe, often France. He likes art, but is partial to any sophisticated yarn involving interesting people.

He usually avoids the first person, so reveals little about himself. A notable exception was his January 1980 article on the "great uncounted minority of the one-eyed." A couple of botched operations for retinal detachment had occasioned his joining the ranks of that "monocular" group in 1978. He found, to his surprise, that his field of vision was reduced much less dramatically than he had imagined and that he could still mingle in crowds, drive a car, hit a golf ball and maneuver through the "maelstroms of traffic" in Paris.

Some years later when this magazine took a look at American public schools that still manage to maintain high standards, Wernick was called upon to tackle the country's oldest, the Boston Latin School, then marking its 350th birthday. The choice of author was simple, and again revealing: Bob Wernick was a 1934 graduate, with high honors, of Boston Latin. One of his statements about the school is especially interesting. "Whatever you learn at Boston Latin," he notes in the story, "is supposed to stay with you, available for use, all the years of your life."

He left that prestigious school with the required background in Latin, went on to Harvard, Class of 1938, roamed over to Paris to try his hand at writing. Once there he fell in with a group of painters and sculptors that included Alberto Giacometti and his brother Diego. Some 35 years later, he would write about Diego, a sculptor in his own right, in our June 1975 issue. During World War II he served in the U.S. Army's psychological warfare branch. I've been reading his first novel, *The Freebooters*, a war book originally published in 1949. It is a killingly satiric work that also manages to touch the heart.

After the war, Wernick walked into *Life* magazine and told a couple of the editors that one particular feature needed "more snap." They hired him to provide it. He stayed for a few years, thereafter writing, as he still does, not only for us, but also for a wide assortment of magazines that has variously included *Life*, *Vanity Fair* and *Reader's Digest*. Along with his wife, painter Marion McClanahan, he now shuttles between a sixth-floor walk-up studio in Paris and a town house in Sea Island, Georgia.

Wernick first sold us an article in March 1974. It was about medieval tapestries. Now he's sold us 50 and become a habit with us. God knows what his final score will add up to. Who cares?

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Phenomena, comment and notes

In the struggle to protect our planet, ornithologists and their grass-roots flock have insights worth following

Bird-watching is almost synonymous with harmless eccentricity, a passion that keeps its practitioners from more destructive vices. There is something faintly comical about a group of people, often middle-aged, standing in field or wood with binoculars raised toward a tree branch on which sits a small, mouse-colored organism of the sort a contributing editor here calls "Tweety birds." To the movers and shakers, talking into their car telephones as they race to the airport, birders are irrelevant to the real world. Yet these are the meek who may not so much inherit the Earth as change its future. Sensibly dressed kooks are banding together to save the miner's canary; if they succeed, they will ineluctably save the miner as well.

Birders tend to be low profile, and no one is sure how many there are. Only about 50,000 take part in the annual Christmas counts or subscribe to such serious journals as *American Birds*. But 600,000 field guides are sold every year, and birders spend an estimated $4 billion traveling to where the wildlife is. The 60 million Americans who feed birds spend another $500 million annually for more than a million tons of birdseed. Like bitterns hiding in the reeds, they are out there.

Birders have spoken up before. At the turn of the century they stopped the slaughter of egrets for their plumes. In the 1930s they saved the ducks before the last one was shot out of the sky. This time the goal is grander, however: nothing less than to save the birds of the world, all hundred billion individuals of the 8,700 or so species known so far.

This time is different, too, because the birders are not alone. People who have zero interest in any bird that is not on a platter are taking a personal interest in what is antiseptically called the "environment": the air we breathe and the gases we have put into it that may change the climate; the water in streams and lakes; the ocean itself, no longer perceived as an infinite sink for anything we throw into it. It is not just a question of esthetics this time around: people are scared. It would be easy to see the birders as an insignificant special-interest group in the much larger campaign to keep the Earth livable. But it is the birders who bring an expertise in practical ecology to the campaign: their goals precisely delineate the things that must be done to solve the larger questions of survival.

A few years ago my friend the physicist and I went down to the coast at Chincoteague, Virginia. He saw only the energy in wind, waves and moving sand until a couple of oystercatchers finally caught his eye with their black-white-and-red color scheme (*Phenomena*, July 1985). He had always belittled campaigns to save unglamorous, seemingly unimportant species (somehow the infamous snail darter always came up). But when I pointed out that saving a piece of habitat for one endangered species also meant saving that habitat for any number of other plants and animals, including all those necessary invertebrates we pay so little attention to, he brightened: "Now it makes sense."

When we preserve habitat for a threatened creature, we also inevitably save a piece of what Paul Ehrlich calls our life-support system. It is vegetation that takes carbon dioxide out of the air and puts oxygen in; wetlands that cleanse and store fresh water; saltwater marshes and mangrove swamps that carry marine ecosystems. When we save a swamp, a marsh, a bit of woodland, a wooded stretch along a desert river for the sake of some bird, we are saving exactly what we need to save the planet. When bird-loving suburbanites plant dogwood and Russian olive where lawn used to be, they do the same.

Two blue-ribbon books published in October celebrate birds—and challenge us to do something about them. The first, published in the United States by Houghton Mifflin, is forthrightly entitled

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For ten million years, the flightless kagu and its forebears evolved on isolated New Caledonia. Human activities now threaten its survival.

Save the Birds and is the key to the worldwide campaign of the same name. It is a unique publishing venture, the joint product of Pro Natur, a German conservation consulting firm, and the International Council for Bird Preservation (ICBP) in Cambridge, England. First issued two years ago, the book has been published in most of the European countries and in Japan and Taiwan. Negotiations are under way to publish it in other countries including Australia, Brazil, India, Mexico, New Zealand, Poland, South Africa, the Dominican Republic and the Soviet Union.

In each case national and local conservation organizations become co-sponsors, and a whole new section concerning the country of publication is included. The United States edition is sponsored by the independent Audubon societies of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Florida and Illinois, and by my home club, the Audubon Naturalist Society of the Central Atlantic States. (The National Audubon Society turned the project down.) Roger Tory Peterson and Walter Cronkite wrote the special section on saving America's birdlife.

Beyond the book, the ICBP campaign is opening with projects representing three crucial habitats. Wetlands are symbolized by the Okavango Delta in Botswana, the largest wetland in southern Africa. For forests the ICBP has chosen the Atlantic forests of Brazil, covering just 1 percent of their former range. (Brazilian officials are relying on birds, in fact, for the replanting of ravaged areas now under protection.) For island birds, its first love, the ICBP has chosen a beaut—the flightless kagu of New Caledonia (above).

Those of us who have problems of our own may feel we don't have a lot of concern to spare for a flightless bird we have never heard of, about as far off in the South Pacific as it is possible to get. But the book draws us in deeper. New Caledonia, it turns out, is a chip off the old Australasian continent that drifted away ten million years ago. Buffered from invasion by immigrant species all that time, the island is a time capsule, a treasure house of plants and animals found nowhere else. Just as an astronomer travels back in time when he looks at an object whose light has taken millions of years to reach us, so a naturalist walking into the relict forest of New Caledonia steps back ten million years.

While apparently related to the sun bittern of South America, the kagu is so unlike any other bird that it is often

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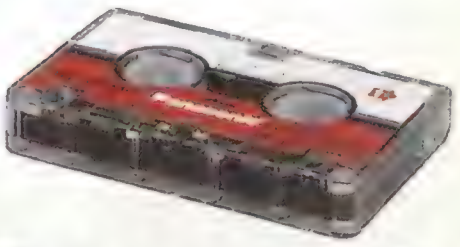

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classified in a family by itself. It is hunted with dogs and collected alive for zoos and aviculturists. The forests it lives in are being cut for timber and to clear land for both farming and nickel mining. The bird sounds worth saving for its scientific interest even if we can't work up much empathy. But to save the bird we'll have to save some of that forest, and the thought of having a ten-million-year-old forest to study sounds too good to pass up, even if the odds are 1 in 1,000 that I will ever get there.

The book doubles as an ecological primer. Sections on each of the major biomes are followed by two-page profiles of endangered birds found there. And the book quantifies the arguments for saving habitats. For every species of bird that goes extinct, it is likely that the planet has lost 2 or 3 species of fish, 35 of plants and 90 of insects. For every 2 species of bird, a mammal is lost as well.

The second book, *Lords of the Air: The Smithsonian Book of Birds*, focuses more on the birds themselves. Here I must, as the phrase has it, declare an interest. Not only is the book published by friends at Smithsonian Books, but coauthor Jake Page is the founding father of this column and a personal friend from our days at *Natural History* magazine in New York just before the Spanish-American War. It's a book he has talked about since we used to drive off to lunch in his red jeep 16 years ago. The second author, Eugene S. Morton, a research ornithologist at the National Zoo, brings scientific expertise and an equal passion for the subject, but there are places in the text where I can hear Jake's voice rising in delight at some unexpected marvel of the avian universe.

S. Dillon Ripley, Smithsonian Secretary emeritus, introduces the book by tracing the Institution's intense involvement in bird study and field biology over the years: three of the nine Secretaries have been ornithologists. You know you are in the right place when the text opens with a section titled "Enchantment." The book goes on into evolution, distribution, flight, migration, communication and social behavior—not as a textbook but more as a discussion by two people who are themselves fascinated by birds and what we are finding out about them.

Lords of the Air also considers the thousand bird species now endangered, and how what we need to do to save them will save us, the lords of the Earth, as well. As Page and Morton point out, "It is certain that the World Bank is as important to bird preservation as are those organizations with 'bird' or 'nature'

The charm of many birds, such as these royal penguins, can be of use in efforts to save their habitat—and the less-glamorous species in it.

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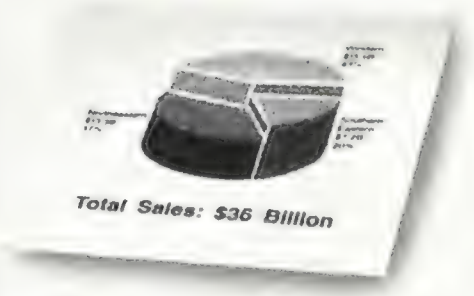

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in their names." As any ecologist can tell you, everything *is* connected to everything else. To solve bird problems, we are going to have to solve human problems. A couple of years ago a friend and I were walking into the rain forest on the Caribbean island of St. Lucia, hoping against hope for a glimpse of the spectacular and highly endangered parrot there. Instead we met a young man with a cutlass (a machete), there to hack out a small clearing in which he would plant pumpkins and squash to feed his family. His actions would contribute to the demise of the parrot, but it was impossible to feel outrage. How argue with a man trying to feed his family?

In the long run, measured in centuries, the most important thing we can do for the birds is to arrange prosperity for every citizen of every nation in the world. Prosperous nations go through what demographers call the transition from a high-birthrate, rapidly growing population—the product of economic insecurity—to a low-birthrate, steady-state population. And it's population growth, with its attendant habitat destruction, that does in more birds than anything else. Backward thinking, of course, but it will help achieve the same noble goal.

My only quibble with both books is an omission. They leave you wanting more, but neither has references or sources for further information. *Save the Birds*, for example, mentions "sister reserves" in North and South America, established to save the same shorebirds—not just the same species, mind you, but the same individuals that migrate back and forth as their forebears have for millennia. If countries in Latin America are setting up reserves despite their own crushing economic problems, I want to know more.

The two books together can only add to the army of eccentrics who care enough about birds to do something. We can root for the kagu, but we can also have the more immediate satisfaction of working for our own birds wherever we live. People who work to save whales or jaguars rarely, if ever, see one. But birds pay off directly. When we make a park, clean up a stream, save a swamp, we can see and hear the results. Birds are mobile—they will show up anywhere we make a place for them—and most are highly visible and vocal, to boot.

The thinking bird lover may well find himself or herself living more lightly on the planet as well. If one fewer car trip per day per birder means a little less carbon dioxide in the air, a little less global warming, a little less rising of sea level, a little less destruction of coastal marshes . . . Like it or not, we're right in the middle of the ecological web. Backward thinking again, but it works for some.

The good news is that it is not too late. One morning last October a group of us were driving on the dikes of Bombay Hook National Wildlife Refuge on the Delaware coast. New birders in the van were rightfully excited at seeing their first Hudsonian godwit, their first Wilson's phalarope swimming and spinning like a nervous wreck. I kept looking, too, at each new bird our leader spotted, remembering and learning at an equal pace. But I also kept putting the glasses down and looking up into the sky, where all day long, long wavering lines of snow geese had been appearing out of the north, back from their Arctic breeding grounds, coming in to land in the pools before us. The sky was alive with birds, as far as the eye could see. It must have looked like this in Colonial times, I kept thinking. The birds are still here. There is still time.
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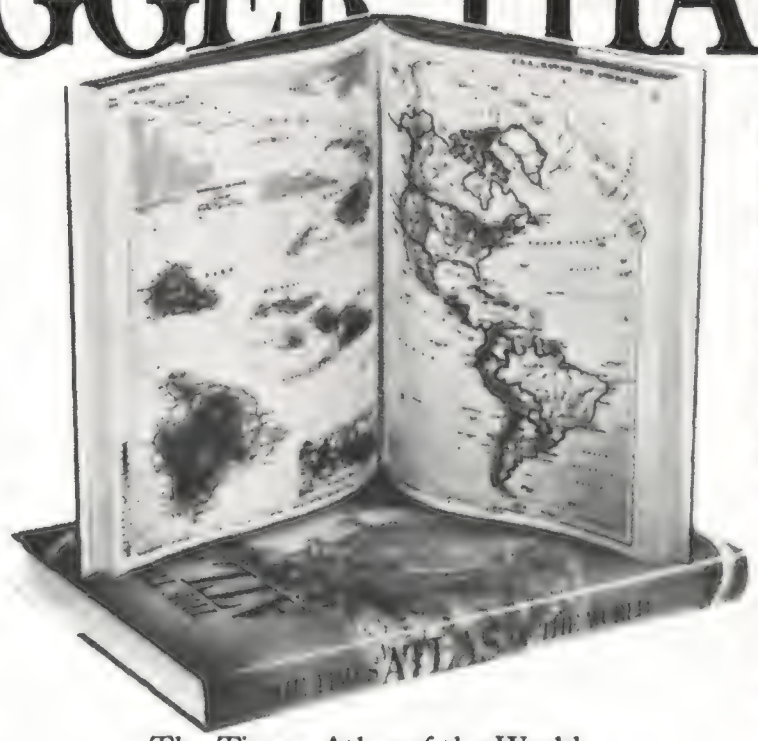

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Opposite: Burt Wurthman, Louis Richardson cull shrimp from catch dumped on deck of the *Capt. Daddy.*

Drowned loggerhead, apparently the victim of a shrimp net, lies on the beach at Cumberland Island, Georgia.

By Jack and Anne Rudloe

Shrimpers and lawmakers collide over a move to save the sea turtles

Fishermen protest that they will be put out of business if forced to use a device that keeps endangered species from drowning in their nets

"Lift your nets and prepare for boarding," the Coast Guard coxswain barked into the radio. "Have your crew muster on the stern and your weapons unloaded and out for display."

Our prey was a 72-foot, rust-streaked shrimp trawler, the *Charlie G.* All morning we had been running south from Cape Canaveral, Florida, in a 45-foot patrol boat, pounding over 7-foot swells. Aboard was Agent Paul Raymond of the National Marine Fisheries Service (NMFS, pronounced "nymphs"), checking to see that the fishermen were pulling TEDs.

TEDs are Turtle Excluder Devices, panels of large-mesh webbing or metal grids inserted into the funnel-shaped shrimp nets. As the nets are dragged along the bottom, shrimp and other small animals pass through the TED and into the cod end of the net, the narrow bag at the end of the funnel where the catch is collected. Sea turtles, sharks, and fish too large to get through the panel are deflected out an escape hatch. Fishermen, who believe that the device causes their nets to dump 20 percent or more of the shrimp as well, call them "trawler elimination devices."

Sea turtles breathe air just as land animals do and must come to the surface every hour or so. Without a TED, they are trapped in a net for as long as it is

Save the turtles, ruin the shrimpers?

Orange portion of net, here being stowed at the end of a day's fishing, is a flexible Turtle Excluder Device.

towed underwater and sometimes drown before being brought aboard. The problem is analogous to the seining of tuna fish, in which thousands of dolphins are drowned every year (SMITHSONIAN, February 1977). The government's requirement for the use of TEDs has become one of the most bitterly fought regulations in the history of fisheries management.

Last spring the Department of Commerce ruled that TEDs would be required in all offshore waters of the Southeastern United States, then delayed implementation pending the outcome of lawsuits filed by the fishermen. But TEDs were still required off Cape Canaveral, Florida, where the waters fairly seethed with loggerhead turtles. We were on a patrol craft checking compliance.

All the boats we had checked that day had been pulling TEDs, but to the amazement of the Coastguardsmen and the fishery agent, the captain of the *Charlie G.* didn't seem to know what they were. "Tags?" his bewildered voice had come over the radio. "We ain't found any tags out here."

"No, TEDs," Coxswain Gill Heeney enunciated. "Turtle Excluder Devices. Are you pulling them?"

There was a long pause and then the voice turned sullen. "No. Ain't got none of those."

The patrol boat eased up to the trawler, and Coastguardsmen wearing pistols and bulletproof vests under their life jackets jumped aboard. For 45 minutes they checked the catch (only 175 pounds of white shrimp after three days at sea), searched for drugs, inspected life jackets and fire extinguishers, noted the serial numbers on guns. The trawler crew was legitimate, if poorly informed. The owner and the captain were eventually fined $4,000 apiece for fishing without TEDs. It was only one skirmish in a ten-year-old battle between shrimpers and conservationists.

The special appeal of the primordial

Sea turtles have little of the appeal, much less mystical attraction, for humans that dolphins do. And yet they are fascinating in their own right, great quiet creatures that swam the oceans long before the first mammal squeaked on dry land, before the oceans we know today even existed. There is so much to be learned about them—basic things like where they spend much of their lives and how they navigate across the trackless waters. They are imposing, powerful and, in their own way, beautiful. Turtles arose about the time the dinosaurs did, and some people are loath to see them disappear.

The sea turtle has become a symbol of the world's environmental conflict. If turtles are not drowned in our fishing nets, they are sucked up by dredges and ground to turtleburger, or blown to bits in the Gulf

A shrimp trawl is dragged along the bottom like a flattened butterfly net. As the catch is funneled to the back, the excluder device allows shrimp and small fish to go through, but forces turtles out a hatch. When fouled with seaweed, a TED ejects everything.

of Mexico when obsolete oil rigs are removed by detonation. They wash up dead on the beaches, their guts crammed with plastic bags that they have mistaken for their favorite meal, jellyfish.

We have worked closely with both shrimp fishermen and conservationists fighting to save the sea turtles, most species of which are endangered. Our small marine laboratory in Panacea, Florida, provides live marine animals to schools and research laboratories. Many of our horseshoe crabs, electric rays, octopuses and other specimens come from shrimpers. But we have also been involved in sea turtle research and conservation. Since 1970 we have tagged and released 119 Kemp's ridleys, the most critically endangered of the seven species of sea turtles, and documented some of its habitat preferences. Almost all the turtles in the study were brought to us by commercial fishermen.

Since 1978 all six species found in U.S. waters have been listed as endangered or threatened under the Endangered Species Act. In North America and all over the world, their populations have been decimated by development on their breeding beaches, butchery of nesting females and theft of eggs from their nests. They die at sea from oil slicks and from eating our plastic garbage. And they die in fishermen's nets.

According to NMFS estimates, approximately 48,000 sea turtles are caught each year on shrimp trawlers in the Southeast and approximately 11,000 die. Of those, 10,000 are loggerheads and 750 are Kemp's ridleys. The extrapolation comes from 27,500 observer hours during which 800 turtles were caught; approximately 25 percent were dead when they hit the deck.

While all sea turtles have suffered major population declines, the Kemp's ridleys are in the most trouble. They nest on only one beach—near Rancho Nuevo, Mexico—where they have declined from 40,000 nesting females a day in the late 1940s to 10,000 in 1960 and then to little more than 500 in the '80s. The decline continues at a rate of about 3 percent per year. The species may be extinct by the turn of the century. Since the nesting beach is now protected, shrimp nets are the major suspect.

Meanwhile, the basis for the biggest economic chain in North American fisheries is shrimp, a family of crustaceans even older than sea turtles. At least six species are caught from Maine to Texas, but it is the brown, white and pink shrimp that form the bulk of the fishery in the Southeast. Americans down an average of 2.4 pounds each of shrimp a year, making it far and away the most popular seafood. Run-down luncheonettes a thousand miles from the sea can be counted on to serve deep-fried butterfly shrimp. In 1988, 331 million pounds worth $506 million were landed in the United States. (The rest of the 802 million pounds eaten in this country last year came from elsewhere.) More than 30,000 commercial fishermen and their families rely on shrimp, and many times that number work in shoreside processing plants.

The Rudloes operate a marine-specimen business in Panacea, Florida. Jack has written six books about the natural history of the Gulf of Mexico.

The shrimp fishermen work in one of the world's last major concentrations of nesting loggerheads, and many cannot believe that any of the turtles are all that rare or endangered. The day after our trip with the Coast Guard, we were aboard the shrimp trawler *Capt. Daddy*, dragging TEDs with Captain David Cook a half-mile off the Cape Canaveral beach. The shore was an almost continuous wall of high-rise condominiums and hotels, save an occasional patch of palm and vegetation on an unsold lot.

"They point the finger at the shrimper and say he's killing the turtle," Cook said. "But look at what they do building on the beach like this. Turtles don't have any place to lay nowadays. She'll come up and see all those lights and go back and drop her eggs at sea. It isn't where she *wants* to lay . . . it's where she *can*."

"We just want to make a living"

Cook spoke softly, with a melodious low-country accent. Unlike many fishermen we've worked with, his clothes were meticulous; his crew were college students, articulate and knowledgeable about everything we caught. "There are all kinds of men out here," he went on. "There's a few rough ones who'll beat a turtle's head in, cut his throat and throw it overboard, but most of us do our best to set the turtle back alive. We turn him over on his back, pump the water out of him and send him on his way. We don't want to catch the turtle, we just want to make a living. It makes me mad when Greenpeace and the Audubon Society run to the newspapers blaming us whenever dead turtles wash up on the beach. If people really knew how few turtles we drown and what a hardship TEDs are causing, they'd think differently about this."

Depending on where it is fishing, an individual vessel may work for weeks, months or years without catching a turtle, much less causing a fatality. But when a dead turtle washes ashore on a Southeastern beach, there's generally somebody there to find and report it. And unfortunately for the shrimping industry, the ratio of dead turtles on the beach coincides rather closely with the number of trawlers working in the vicinity. Strandings usually pick up along the Georgia and South Carolina coasts after shrimping season starts. One boat may not catch many turtles; but considering that approximately 7,000 offshore commercial vessels tow for four to five million hours per year, the cumulative impact is serious. To this must be added the 11,000 bay boats that fish inshore where TEDs are not required, catching an unknown number of turtles—including the young ones that live in shallow water.

The shrimping industry hotly disputes the government statistics, claiming stranded turtles are mostly victims of pollution or disease. A recent necropsy study

Armed Coastguardsmen in an inflatable cross from their patrol boat to shrimp trawler off Galveston coast.

They will check for TEDs, but also will be looking for drugs, illegal weapons and safety code violations.

Louis Richardson drops shrimp in basket. Pile of dead fish, game species and all, will be dumped overboard.

Captain Edward Keith argues that, in a lifetime of fishing, he has drowned only three or four turtles.

by researchers at Texas A&M University, however, showed that of 77 dead ridleys that washed ashore, 53 appeared to have died by drowning. The cause of death could not be determined for the rest, but immediately prior to death nearly all had been feeding on organisms caught incidentally by trawlers.

Yet Dr. Richard Wolkie, a professor of veterinary medicine at the University of Rhode Island who has necropsied stranded turtles in the South Atlantic, isn't so convinced that trawlers are the entire story. "The shrimpers are killing some of these turtles, but I don't think all. I've found loggerheads with fungus infection in their lungs. They're like everything else; they suffer from viral, fungal, parasitic and bacterial diseases. And most of the stranded specimens I see are too decomposed to tell much."

When the trawls aboard the *Capt. Daddy* were hauled back, the deck writhed with small fish, crabs, ink-spurting squid, and 30 pounds of medium-sized white shrimp with gleaming emerald tails. Besides the turtle controversy, sports fishermen protest the annual two billion pounds of nonshrimp organisms inadvertently caught, called the by-catch, including juvenile trout, redfish, whiting and flounder that are shoved dead over the side. For every pound of shrimp caught, nine pounds of fish die.

"We just don't know how many shrimp we would have caught if we weren't pulling TEDs," Dave Cook worried as we raked through the pile, culling shrimp from the croakers, catfish, sea robins and anchovies that were gasping away their lives. "You don't see any big flounder or whiting, do you? They get shot out along with the turtles, and that hurts." His voice rose: "The trouble with these environmentalists is that they don't have any idea of what goes on out here."

Freedom from complexities of life ashore

Shrimping is backbreaking work performed on sometimes-rough seas in storms and sudden squalls. The reward for a life of shrimping is usually arthritis: swollen knuckles from too many catfish spines and from having to spend days down in the bilge repairing worn-out equipment in cold, wet weather. But shrimping is also freedom from the complexities of life ashore and enjoyment of the beauty of a calm sea at dusk. Commercial fishing is a way of life increasingly foreign to the desk- and paper-bound world of middle-class America. Many shrimpers, like David Cook, are second or third generation, following the ways of their fathers and grandfathers. Fishing, as one of the industries in which a college degree is not essential, has significant social value.

No one wants to close the shrimping industry down. Yet the law requires endangered species in the public

domain to be protected, regardless of cost. A total shutdown of shrimping was a very real possibility if environmentalists were to sue under the Endangered Species Act. To save the fishery, NMFS began looking for a technological solution. From 1978 through 1984, the agency spent $3.4 million developing and testing the TED. By 1981, NMFS was promoting voluntary use of the device and in 1983 began passing out free TEDs to encourage shrimpers to try them—as did the Center for Marine Conservation, an environmental group.

Even though shrimpers would catch fewer turtles, sharks, horseshoe crabs and jellyfish with TEDs in their nets, most were vehemently opposed to using them. Quickly perceived by the fishermen to be dangerous, the first TEDs were heavy metal devices that swung violently overhead when nets came up in rough seas. Even in later models, the escape panels sometimes clog up with sponges, roots and seaweed—not to mention old oil drums, tarpaulins and other human trash from the bottom—and eject shrimp and edible fish along with turtles out the hatch.

Fishermen saw the TED as one more hardship in an industry already stretched to the breaking point by high fuel and insurance costs, overfishing, and competition from cheap foreign shrimp raised in ponds or caught by subsidized vessels.

Many swore they'd die before they ever put TEDs on. As one fisherman told us last year, "Shrimpers are like a bucket floating in the sea, half full of water, about to sink. And TEDs are like the waves splashing in on us—we'll be under before you know it. A TED ain't nothing but a big hole in the net, and I'll be damned if I'm gonna pull them."

Newer TEDs were lighter, safer and cheaper, but nobody wanted them. Despite test results to the contrary, shrimpers feared that under real-world working conditions the new TEDs would still cause them to lose 20 to 50 percent of the shrimp caught. NMFS claimed the number was closer to 4. All the while, dead turtles continued to wash ashore, and groups like Greenpeace and the Center for Marine Conservation were demanding an end to the killing.

The voluntary approach failed. The U.S. Fish and Wildlife Service demanded mandatory use of TEDs. The Center for Marine Conservation announced it would sue NMFS under the Endangered Species Act. Such a suit would almost certainly succeed and probably force a total closure of the fishery.

With the gun to their heads, industry representatives then agreed to phase in the use of TEDs. When public hearings were held, however, rank-and-file fishermen rose up in rebellion. Thousands showed up in auditoriums in places like Biloxi, Mississippi, to vow civil disobedience against what they still perceived as a threat to their survival. "Perhaps some species were just meant to disappear," said Governor Edwin W. Edwards of Louisiana, to thunderous applause. He continued, "If it comes to a question of whether it's shrimpers or the turtles—bye-bye turtles."

Shrimpers filed lawsuit after lawsuit but lost in court each time. The fight then moved to Congress where the Endangered Species Act was up for renewal. After prolonged debate, TEDs were required in the final bill, sort of. They would become mandatory in May 1989—but only in offshore waters. After May 1990, tow times in inshore bays behind barrier beaches, where many young sea turtles live, would be limited to 90 minutes—an unenforceable ordinance. Because all testing has been done in offshore waters only, TEDs would not be required inshore until NMFS could test them under inshore conditions. For now, inshore turtles would have virtually no protection.

Arguments over the cause of death

In the fall of 1988, immediately after the bill was passed by Congress, disaster struck anew. Wave after wave of dead turtles began washing up along the coast from Georgia to New Smyrna Beach, Florida. From October to December, 201 dead turtles washed ashore, of which 70 were ridleys. Ninety loggerheads, 17 leatherbacks, 3 green turtles and 12 rotted, unidentified carcasses also washed up. Only 32 ridleys had washed up during these months from 1980 to 1986. The strandings occurred while 150 to 200 boats were working a few miles to the north.

A few people speculated that perhaps migrating turtles had swum through an area farther north where toxic wastes were dumped, and had been able to swim south before dying. They pointed to the dead bottlenosed dolphins that had washed up on the shore during the summer of that year, a die-off still not satisfactorily

Green turtle that had come out of water to bask in sun returns to shining lagoon on Tern Island, Hawaii.

Turtles mate in the shallow water around the atoll, part of the Leeward Islands National Wildlife Refuge.

explained. Something other than shrimp fishing was killing the turtles, they argued. Dead whales and manatees, animals that had not been caught in shrimp nets, washed ashore in Florida during the same period. In the Florida Keys, sea grasses and coral reefs were dying. Across the ocean, seals were dying in the North Sea.

Environmentalists insisted that whatever might be killing other marine organisms, it was shrimp fishing that was killing the sea turtles. Sally Murphy of the South Carolina Wildlife and Fisheries division pointed out, "When there's no shrimp boats out there, there are no strandings. In 1987 when the shrimping season began on June 4 in South Carolina, 143 loggerheads washed up dead. Then in 1988 the shrimp season was delayed until June 28 because there had been intensive rains, and the shrimp were too small to harvest, and only two turtles washed up dead during the same period. It isn't pollution; shrimp boats drown turtles."

More proof—and a demand for TEDs

Further evidence came from a Cape Canaveral study in which vessels used TEDs on one side and regular nets on the other: over a two-year period 40 turtles were caught and 3 drowned. They all came from nets that lacked "turtle shooters."

After all the years of delay, of fishermen fighting TEDs in court and trying to subvert the Endangered Species Act, environmentalists were furious. They were tired of stepping over shark-bitten carcasses of drowned turtles buzzing with flies, ghost crabs tearing at their eyes. They called for a meeting of the Florida Marine Fisheries Commission and demanded that the state require the immediate use of TEDs.

In December 1988, over vehement protests from the shrimpers, the State of Florida acted, requiring emergency use of TEDs in state waters off northeast Florida. The May 1989 date stipulated by the federal government was not good enough. In July 1989 Florida extended their use to all offshore waters.

"I can't see it," Captain Edward Keith said one night last February when we were aboard his boat, the *Lady Murle II*, off Apalachicola, Florida, where TEDs were not yet required. "I've been shrimping most of my life, and I haven't drowned over three or four turtles—nothing like the 11,000 the government's talking about on TV. That's a bunch of baloney."

Edward had worked with us even before he started shrimping 18 years ago, collecting specimens and helping to tag turtles. A large percentage of our turtle data and many of the specimens that we sold through our laboratory came from him.

"It won't just be turtles," he chortled at the irony of our years of conservation efforts. "You can probably kiss your business goodbye. Those nets kick out a lot of junk you sell—horseshoe crabs, sponges, sea cucumbers, electric rays. In a few months when we have to put TEDs in, you may be out of business." We were dragging for electric rays to be used in biomedical research. It's possible these fish were big enough to be excluded by a TED. He might be right.

An olive ridley, native to both coasts, laboriously moves from nest to sea on Nancite Beach, Costa Rica.

It was 3 in the morning when Pete Johnson, Edward's deckhand, cried, "Hey, look, we got a sea turtle!" He pointed to the starboard outrigger, where the net had just risen from the water and stretched out into the midnight sea. "See him falling back into the net?"

Anxiously we waited as the two crewmen hoisted the nets slowly out of the water. With a jerk of the tail bag, a deluge of fishy, bulging-eyed creatures tumbled out onto the deck. Jumbo pink shrimp jackknifed, blue crabs scurried off in all directions, and catfish grunted and writhed on the deck. On top of them all thumped down the loggerhead. There it lay, deck lights gleaming off its scaly yellow flippers, its brown shell rimmed

Most endangered of all the sea turtles, a Kemp's, or Atlantic, ridley crosses sand at Rancho Nuevo, Mexico.

A hatchling loggerhead swims among sargassum weed. In summer, this turtle ranges north to New England.

Once hunted as a source of tortoiseshell for jewelry, as well as meat, a hawksbill swims in the Bahamas.

A leatherback covers its nest on a Suriname beach. Individuals of this species can grow to 1,600 pounds.

with white barnacles. The turtle was gasping for breath, slowly opening and closing its heavy-lidded eyes. Edward grabbed it by its front and rear flippers and heaved it on its back, where it flopped around on its domed shell, slapping the deck with its foreflippers.

We culled off, stepping around and over the turtle as we picked out the rays, shrimp, slipper lobsters, crabs and edible fish from the rest of the catch. The turtle was in the way, as all turtles are in the way of modern man. And when we were finished, and it had recovered, we punched metal tags into its flippers, measured its carapace, and the three of us hoisted it over the rail. The turtle landed with a splash and swam off.

We moved inshore, and on the next haul, to our delight, there was a frisky ridley. Usually we would drag for weeks and never see one. The next time the nets came up, to our amazement, we caught a glimpse of still another small ridley. It tumbled down and vanished beneath the avalanche of shrimp, crabs and fish. But somehow it didn't look right. Then we got the stench. It was rotten, dead at least a week. A crewman flipped it over. The turtle's throat had been cut.

Peter Johnson looked appalled. He shook his head. "Maybe someone was gonna eat him. Then come morning, he was too tired and threw him back." His words trailed off hollowly, "I don't know. . ."

Edward's voice was skeptical. "More likely they grabbed him, jabbed him like this," he said, simulating a short, vicious stab with a knife. "Some think if we get rid of these turtles, they won't be endangered no more. They'll be extinct."

By the May 1 deadline for implementing TEDs, opponents had lost a court challenge, but members of Congress from Louisiana had persuaded Secretary of Commerce Robert Mosbacher to delay further. Because shrimpers needed more time to buy and install TEDs, only warnings would be issued through the end of

June. As the July 1 deadline drew near, shrimpers reluctantly put in the hated TEDs. Then nature struck with the biggest bloom of sargassum weed in years. The golden seaweed washed up on beaches from Florida to Texas, hopelessly clogging the excluder panels as it came. Shrimpers were furious when they lifted their nets to find them full of seaweed and largely empty of shrimp.

Because of the seaweed, Mosbacher told the Coast Guard not to enforce the law. The shrimpers happily cut the devices out of their nets. Environmental groups prepared to go to court; Commerce staff members advised the Secretary he could not legally refuse to enforce the law, and he reversed himself.

On Friday, July 21, the order was broadcast on the Coast Guard's "Notice to Mariners," and the airwaves exploded with anger and frustration. In an unheard-of show of unity, between 400 and 600 shrimp boats steamed into port to protest. By nightfall the Coast Guard in Galveston had a blizzard of blips on their radar screens, all heading into the Houston ship channel, one of the busiest seaways in the world (SMITHSONIAN, October 1985). By morning, major shipping lanes along the coast were blockaded with trawlers. Trying to clear the Corpus Christi channel, Coastguardsmen cut anchor ropes, tried to drag boats away and blasted them with water cannons, knocking out windows and flooding engines.

Mosbacher announced he was abandoning TEDs entirely, but in 45 days requiring all shrimpers to limit their tows to 105 minutes, so that any turtles caught would not drown before the net was hauled to the surface. Normal tows, in contrast, run up to four hours, longer than most turtles can go without breathing—especially when stressed. To make enforcement manageable, his order continued, all shrimp boats would have to lower and raise their nets at exactly the same time.

With an explosion of press releases and television appearances, the National Wildlife Federation followed the Center for Marine Conservation and other

In a spontaneous protest last July, shrimp boats linked up to blockade the Corpus Christi ship channel.

groups and filed suit. Florida instituted its own emergency TED regulations in state waters. It did not help when a shrimper off Fort Myers was arrested after he cut the throats of three nearly drowned loggerheads.

A federal judge ordered Mosbacher to enforce some immediate turtle protection until he ruled on the TED issue. The Secretary responded by requiring the 105-minute tow to take effect immediately.

In August the Coast Guard reported that, based on aerial surveillance and about 100 boardings, 88 percent of the fleet was not complying with the shorter tow times. Mosbacher withdrew the limited tow times and once again required TEDs.

Again shrimpers steamed to their home ports to tie up in protest. When President Bush visited New Orleans in September, crowds of fishermen and their families stood along his motorcade route shouting, "No TEDs! No TEDs!"

While the President listened to complaints from local Congressmen, more than 50 shrimpers blockaded nearby waterways. But this time, instead of confrontation, the Coast Guard videotaped the boats, identified the owners, and issued citations that could amount to $55,000 per vessel.

"The ------- environmentalists are making criminals out of hardworking men!" stormed Dewey Fortner, captain of the *Raven* out of Tampa. "There's no way I can make a living with a TED. I'll put one on my net after they take me to jail."

The flip-flopping through the summer made an already difficult situation worse. One shrimper spoke angrily at a meeting with the Coast Guard after the Galveston blockade: "It's the on-again, off-again, on-again stuff we can't stand. If they'd have made us put on TEDs—and leave us alone—we'd either get by, starve or go bankrupt, but there wouldn't be this misery of jerking us around."

"This whole thing is terrible," agreed one woman. "The turtles are dying and the shrimpers are starving. No one wins."

The fishermen reasoned that stopping oil tanker deliveries to East Coast would bring them attention.

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By Geoffrey Ward

'Future historians will curse as well as praise me'

FDR's library is crammed with history, the quixotic treasures of a mercurial President who never threw anything away

It is fitting that two of the first sights the visitor sees upon entering the Franklin D. Roosevelt Library, on the old family estate at Hyde Park, New York, are the massive Dutch family Bible on which FDR took the oath of office four times—twice as many times as any other President—and his White House desk, its broad top forested with knickknacks, the high-backed chair behind it frayed by a dozen years of hard use by a President who could not rise from it unaided.

The library itself is a symbol of the transformation of government and the Presidency over which Roosevelt presided as he struggled with the gravest crises that Americans have faced since the Civil War—the Great Depression and World War II. No President before Roosevelt ever built such a library; no President since has failed to do so. And the story of its creation half a century ago is, in microcosm, the story of Roosevelt's exuberant style as a leader, full of ego and energy, boldness and cheerful duplicity.

A President's papers had always been considered personal property. George Washington set that precedent, bundling up his files and taking them home with him in 1797 to Mount Vernon. He had hoped to build a library there, but he never got around to it. During the 142 intervening years, precious Presidential documents were variously saved or scattered, sold, swapped, given away as souvenirs, or cut up for autographs.

Bushrod Washington lamented that some of his uncle's papers had been "excessively mutilated by Rats." Ulysses S. Grant mislaid a good many of his letters: "The only place I ever found in my life to put a paper so as to find it again," he once confessed, "was either a side coat or the hands of a clerk more careful than myself." Most of Zachary Taylor's letters were burned when Union troops occupied his son's Louisiana home in 1862. The day before he died in 1886, Chester A. Arthur saw to it that three garbage cans heaped four feet high with documents were set ablaze.

At the turn of the century, the Library of Congress began to take this problem in hand, and by the late 1930s it had managed to assemble the bulk of what survived of the papers of 23 chief executives. This arrangement might have satisfied most of Roosevelt's predecessors. It did not please FDR. No chief executive cheerfully ignored more Presidential traditions; none was surer of his own place in history. And so, in 1937, early in his second term, he decided upon an unprecedented solution. Even before FDR became the greatest war leader since Lincoln, volume alone had made his papers unique. Because of the special relationship his fellow citizens felt they enjoyed with the man who had allayed their fears during the Depression, addressing them as "my friends" in their living rooms, he received an unheard-of avalanche of mail. Herbert Hoover had received about 400 letters a day, Roosevelt said, while he routinely got more than 4,000. Meanwhile, the New Deal, that vast expansion of federal responsibility over which he presided, was yielding a proliferation of official paper. The Franklin D. Roosevelt Library would eventually contain an estimated 16 million pages of personal and official papers—more than 45 tons of documents, all of it generated in the pre-Xerox, pre-computer age.

From Christmas cards to miniature pigs

"Future historians will curse as well as praise me," FDR admitted, and it seemed to friends and family that he collected *everything*: more than a million stamps in 150 matching albums; coins; medals; 1,200 naval prints and paintings, and more than 200 fully-rigged ship models; armies of miniature donkeys, elephants, Scotties, pigs; English political cartoons by George Cruikshank. There were some 15,000 books—miniature books, children's books, children's books in French, books about the Hudson River. And there were stuffed birds and birding guides, walking sticks, Christmas cards and 37 leather-bound volumes filled with photographs of naval vessels, each carefully captioned in his own bold, slanting hand.

No existing institution, not even the Library of Congress, had room for it all—and FDR could not bear to think of breaking it up. Even if room for everything could somehow have been found, he did not want the record of his life buried amid the records of others.

Wearing mourning band for his mother, FDR sits at White House desk to sign declaration of war with Japan on December 8, 1941. Same desk and chair, used during his four terms as President, now sit in Hyde Park library. Note pictures of his sons in uniform, bust of famous Scottie, Fala.

Color photographs by Henry Groskinsky

Sailing with sons at Campobello, a year before polio struck, FDR looks over model sloop he built.

Eclectic assortment of library treasures includes christening gown, ancestral kilt worn (and hated) as a small boy, pre-polio golf clubs, Fala's collar and FDR's favorite ship model, the frigate *Constitution.*

"Such a collection would be the tail on the dog," he told one admirer, "and . . . my idea is to have the whole thing in a place by itself." That place could be nowhere else but Springwood, the serene Hudson River estate where he grew up, and to which he returned as often as he possibly could—as a young attorney, State Senator, Assistant Secretary of the Navy in World War I, candidate for Vice President; while struggling against the ravages of infantile paralysis; as Governor of New York; and some 200 times as President.

To blunt the criticism of his enemies, who were certain to see in FDR's novel scheme evidence of an unseemly desire to glorify himself, he needed the support of what he called the "fraternity of historians." He began in February 1938 with a letter to Samuel Eliot Morison, a fellow yachtsman and Harvard man friendly to the Administration. Without a proper repository, the President wrote, the material he had collected would be scattered. "For example, my own papers should, under the old method, be divided among the Navy Department, the Library of Congress, the New York State Historical Division in Albany, the New York City Historical Society, Harvard University and various members of my family."

"Whatever you do, Mr. President," Morison replied, "*don't* break up the collection," adding that "dispersion offends all my professorial principles and professional prejudices!"

Roosevelt got Morison to help him convene a luncheon for historians and others who might be helpful, personally drawing up the guest list with a practiced politician's eye toward balance that made sure to include "1 Texas man" and "1 Pacific coast man" among the Easterners. "The ostensible purpose of the luncheon," remembered Waldo Leland, the retired executive director of the American Council of Learned Societies, "was to obtain advice and approval . . . and this advice was reported to be entirely favorable and the approval unanimous. (But had it been otherwise I do not think it would have made any difference.)"

Only moments after the luncheon ended, FDR held a rare Saturday-afternoon press conference to announce that he planned to donate 16 acres for a new library and museum. He stressed that it was not to be a personal memorial, but "for the first time in this country what might be called a source material collec-

Geoffrey Ward writes often for SMITHSONIAN. *His second book on FDR,* A First-Class Temperament: The Emergence of Franklin Roosevelt, *has just come out.*

tion relating to a specific period in our history." No public funds were to be used. The money would come from private individuals, and from the sale of his speeches and whatever writings he might undertake once he left the White House. So far as possible, maintenance would be covered by the 25-cent fee that visitors would pay.

Anticipating the charge that Hyde Park was rather remote for most scholars, FDR said that it was merely two and a half hours from New York City and just four and a half miles from "the city of Poughkeepsie, which has good hotel and other accommodations." At this last, the assembled reporters, all too familiar with Poughkeepsie's limited distractions, broke into laughter in which even the President joined. Later, FDR simply invented a statistic to bolster his case: ". . . far more people," he claimed, "pass over the New York-Albany Post Road [the narrow roadway that runs past the Springwood gate] in a given year than pass over any other road in the Nation. . . ."

His course now set publicly, the President moved fast. The Archivist of the United States, R.D.W. Connor, was deputed to ask Waldo Leland to head the executive committee.

"I'm a Republican," Leland protested.

Said Connor, "That's all to the good."

"If the Library of Congress was good enough for [what remained of] the papers of Washington and Jefferson and Jackson," Leland remembered asking, "wasn't it good enough for those of Franklin Delano Roosevelt?" He finally agreed to serve, though perhaps partly swayed by the argument that in a world threatened by war, it was safest not to concentrate the Presidential archives in Washington.

Immortality from a "Yankee pyramid"

Roosevelt kept up the pressure. The executive committee met just four days later, and archivists were appointed to survey his holdings. Asked on December 19 to draw up plans for incorporation, the Treasury and Justice departments delivered them within 48 hours. A fund drive was launched and consigned to the practiced hands of Frank Walker, former treasurer of the Democratic National Committee.

On April 28, 1939, FDR himself drove a government surveyor around the Hyde Park property in a steady spring drizzle, pausing here and there to show him where to hammer stakes into the muddy soil.

Despite all the careful groundwork, FDR's plans were not greeted with unanimous approval. Columnist John T. Flynn compared Roosevelt to a vainglorious pharaoh, intent upon immortalizing himself by building a "Yankee pyramid." A Chicago Republican was more blunt: "The decent citizens of this country," he wrote the President, "are only anxious to forget the stench of your egotistical, incompetent, unscrupulous and unspeakably costly administration."

The Administration bill authorizing the government to accept Roosevelt's gift sailed through the Senate in April but stalled in the House. A Republican Representative from Missouri charged that "only an egocentric megalomaniac would have the nerve to ask for such a measure." (Of course, every Republican—as well as every Democratic—successor to FDR has cheerfully asked for precisely that.)

In the end, thanks to Majority Leader Sam Rayburn's legislative wizardry, the bill was maneuvered back onto the floor in such a way as to require only a clear majority—and then got it, 221-124, on July 3, 1939.

Franklin Roosevelt was this century's acknowledged master of Washington's levers of power, and Congress had responded to his touch with remarkable efficiency and dispatch. But there was a force closer to home that even FDR could not control: his 84-year-old mother, Sara Delano Roosevelt.

She was at best ambivalent about her son's most recent enthusiasm. No one admired him more. She had

Exhibit shows FDR as photographer at 14; Groton School mementos include medal for running high kick.

Flashing characteristic smile (and cigarette holder), FDR led guests on a tour of Hyde Park in 1937. He was driving his snazzy 1936 Ford V-8 phaeton (opposite), specially rigged so that he could handle it.

assumed he would be a great man long before there was much reason to believe he would become one. She sympathized with her son's desire to have a place where he could display his collections; it was she who had encouraged him in his collecting from the time he was a small boy. She found some comfort, too, in the fresh interest he was showing in Hyde Park. He had not revealed his thoughts about a third term even to her, but perhaps his library plans meant he really did intend to retire from the sordid world of politics in 1940, as she had always hoped he would.

Yet the building he now proposed to put up just a two-minute stroll from her door was to be enormous; and, worse still, he was going to encourage the general public to visit it. For all intents and purposes, Springwood belonged to her. It was her most precious inheritance from her late husband, James Roosevelt—his bold initials still marked the weather vane that turned above her rose garden—and for almost 40 years she had done everything she could to keep it just as he had left it. When the President once gently suggested that the sizable dairy herd his father had established during the Civil War had become an unconscionable drain on her resources, she was unmoved: "So long as I am alive, Franklin, it is a matter of no consequence to me whether the cows make money or not."

She had only reluctantly accepted the changes to her estate demanded by the clamorous, peripatetic lives he and his wife, Eleanor, had unaccountably chosen to lead: the crowds of well-wishers that trampled her lawns on election nights; the reporters and hangers-on who littered her flower beds with cigarettes; the ill-mannered strangers whom she had to pretend to be pleased to see at her dinner table. She had been deeply wounded when her daughter-in-law built a separate Hyde Park home of her own (SMITHSONIAN, October 1984). When her son later constructed for himself a hilltop cottage still farther from the big house, she had made him promise never to spend a night in it so long as she lived—a pledge he faithfully kept.

At the very least, she felt she had been insufficiently consulted about her son's new plans for her old home, and she quietly boarded a liner for her annual summer voyage to France without ever having signed the deed or appointing anyone to do so on her behalf. This was not discovered until the morning of July 24, just two hours before the actual signing ceremony was scheduled to begin. It could not be put off: photographers and newsreel cameramen were already on their way to Hyde Park to record the historic moment.

And so, after hasty consultation with Justice Department lawyers, FDR resolved to put on a sort of dumb show. The cameras whirred as the President and his wife, seated in his open Ford beneath a spreading oak, solemnly but meaninglessly signed the deed of gift to property to which they as yet had no legal title.

Meanwhile, a copy of the deed was rushed to France,

along with a memorandum from the President, urging his mother to sign and "release your life interest in [the] field." There was no response until a White House telephone operator finally tracked her down in Chantilly at the chateau of the American Ambassador, William Bullitt, and FDR himself gently coaxed her into putting pen to paper at last. "The joy I felt at hearing your voice!" she wrote him afterward: his personal call and the telegrams preceding it offered welcome evidence that "you think of me."

She sat near him at the laying of the cornerstone on November 19, 1939, bundled against the chill wind blowing off the Hudson, but smiling fondly as her son warmly recalled his earliest days at Springwood.

Fifty years before, he remembered, "a small boy took especial delight in climbing an old tree, now unhappily gone, to pick and eat ripe Seckel pears. That was one hundred feet to the west of where we stand. Just to the north he used to lie flat between the strawberry rows and eat sun-warmed strawberries. . . . In the Summer, with his dogs, he dug into the woodchuck holes of this same field. The descendants of those same woodchucks still inhabit the field, and I hope they will continue to do so for all time."

The library was dedicated to "the spirit of peace," Roosevelt said, but that autumn, as building continued, much of the world was at war. By the time construction was officially completed on July 4 of the following year, France had surrendered and Adolf Hitler seemed poised to invade Britain. Two weeks later, FDR was renominated for his unprecedented third term.

It took another year to ready the exhibits and arrange things to the President's liking. The library was not dedicated until June 30, 1941—eight days after Hitler invaded Russia. The first visitor, Floyd B. Avery of nearby White Plains, New York, paid his quarter and walked through the front door two days later. He was "a lifelong Republican," he told the press, but had found the exhibits "very interesting."

The President's mother never fully reconciled herself to the library's presence, and when she realized her son would abandon his old cubbyhole of an office just off her porch for a spacious new study, she had a life-size portrait of herself painted to hang near his new desk. She also found some of the exhibits distasteful, particularly the more bizarre gifts to the President displayed in a room that the Roosevelts privately called the "chamber of horrors." She was not amused, for example, when the Gridiron Club gave the President the mammoth papier-mâché caricature that portrayed FDR as the Sphinx—an allusion to his long, exasperating silence about running for a third term—with its most prominent feature a massive, jutting jaw. An innocent White House aide asked the President's mother if she didn't think it was a pretty good caricature.

It was *not*, she said; her jaw was identical to her son's. Did the aide think this grotesque object looked anything like *her*?

The President's eyes filled with tears

Sara Delano Roosevelt died at Springwood on September 7, 1941, in the bed in which she had given birth to her son. Not long afterward, Grace Tully, one of the President's secretaries, came upon an unfamiliar carton and asked FDR about it. It was strange to him, too, he said. They opened it together, finding coils of his baby hair; the lace dress in which he had been christened; bundles of his boyhood letters, each package carefully wrapped and marked in his mother's confident hand. Suddenly surrounded by these proofs of his mother's consuming love, the President's eyes filled with tears.

The world war changed everything for Roosevelt, for his country—and for his library. The threat of war had already forced him to abandon plans to retire to Springwood; now, its reality—and the gasoline rationing that accompanied it—insured that the flood of visitors FDR had hoped for remained a trickle.

It also imposed strict military security on the old estate. Helen Roosevelt Robinson, who was the Republican daughter of FDR's half-brother and had grown up right next door, was shocked when she returned to her old home in the autumn of 1942. She found herself challenged at her own gate by "fixed bayonets . . . a horrid situation," and had to endure the indignity of being fingerprinted. Late one evening, taking her dog out for a final walk before going to bed, she and her mortified pet were blinded by a searchlight, while an unseen guard shouted "Who goes there?"

During his wartime trips home, Roosevelt managed to snatch as much time as he could in the library. His secretary William Hassett often found him there, "happy as a clam," signing and sorting books, or dictat-

President's study in the library was the place from which he broadcast three of famous "fireside chats."

During royal visit in 1939, Sara sat between George VI and Queen Elizabeth. President's wife is at far left.

Wheelchair is a converted kitchen chair; portrait on the easel is of his mother, Sara Delano Roosevelt.

At controversial Yalta meeting in 1945, FDR arranged the future with Winston Churchill and Joseph Stalin.

ing exhibit labels or personal anecdotes for the memoirs he still hoped to publish someday. He loved to show the place off to important visitors. Winston Churchill, President Manuel Quezon of the Philippines, China's Madame Chiang Kai-shek, Princess Martha of Norway, King George II of Greece, Queen Wilhelmina of the Netherlands, former empress Zita of Austro-Hungary—all walked alongside his wheelchair, stopping from time to time as he told an old story or pointed out an especially fine piece of rigging.

Samuel Eliot Morison, Roosevelt's ally during the campaign for the library, offered some advice at the dedication. Essentially he told FDR: if you want "to keep a snug harbor for all your collections and your papers from the White House" you'll have to get rid of some "oddities."

The President laughed but emphatically did not agree. He continued to accumulate miscellaneous objects, enthusiastically accepting for the library three fragments of petrified ginkgo wood; a silk hat worn by a fellow candidate during FDR's first political campaign in 1910; a miniature stained-glass window fashioned from fragments of larger windows blown out of the House of Commons by Nazi bombs. In late 1943, he himself sent to the museum a rusty horseshoe he had spotted in the sand while picnicking with General Eisenhower after the Allied conference at Cairo.

FDR never seemed to lose his eagerness to compile the most complete record possible of all the history he was helping to make—at least once with potentially disastrous results. One morning he handed a sheaf of papers to Edgar Nixon, one of the library's first archivists, and told him to put them in the safe. Among them, Nixon noted to his horror, was a scrap of paper giving both the location of and the approximate date for the invasion of Europe. For months he worried that he would somehow let slip these most precious of all Allied secrets. It was not until D-Day actually arrived that he began sleeping soundly again.

"Old Ironsides" and the Oval Office

Roosevelt's most prized ship model, the USS *Constitution,* built in 1815 and rerigged by FDR himself, rested on the mantel of the Oval Office in the White House throughout his Presidency. It was a point of pride in every office Roosevelt ever occupied. Once, when an archivist innocently suggested it would do very well among his ship models in the library, FDR made it very clear that the library was not likely to inherit "Old Ironsides" before the President left office.

But about four years later, on April 7, 1945, the model unexpectedly turned up at Hyde Park as part of an unusually large shipment of objects, books and papers that FDR had ordered sent to the library before

setting out himself for a badly needed rest at Warm Springs, Georgia. The library staff was still braced for another shipment of books to be sent North after the President finished sorting them into the wooden crates he had unaccountably taken to calling "coffins," when he died five days later. He was buried at Hyde Park on April 15, in the rose garden that stands about halfway between his mother's house and his library.

When in 1917, Theodore Roosevelt, the President to whom his distant cousin most often compared himself, sent locked boxes of papers from Oyster Bay, Long Island, to the Library of Congress, an archivist suggested that the former President send along the keys. "The Lord only knows where the key is," TR answered. "Break the cases open and start to work!" FDR had never been so ready to have strangers nose through his papers. His fierce drive to insure his place in history kept him from discarding anything. But that impulse was nearly matched by his lifelong love of secrecy. He could never be persuaded to sign a formal deed of gift for his papers. Instead, he dictated a memorandum in 1943 setting up a "Committee of Three" of his most trusted aides to winnow through them should he not live to do so, deciding which should be released, which sealed for a time and which withheld forever.

Plaques, ties, campaign buttons, even a megaphone, memorialize FDR's astonishing political progress.

He believed that his personal correspondence with the King of England should "never" be read by anyone else, and evidently he once planned to destroy thousands of brief notes headed "The White House" and signed "F.D.R." with which he often made his wishes known. "Those chits are nobody's business," he told a Senate delegation, "so long as the final determination is made a matter of record. . . . But, in arriving at the final determination of any question of government, the machinery is not of interest to anybody, and it is not going to be." Of course, it is precisely the machinery of decision making that does interest biographers and historians—the final determination can be found in the files of any newspaper. We can all be grateful that Roosevelt's compulsion to control access was not allowed to overcome his desire to leave behind as complete a historical record as he could.

Heartfelt messages from jobless men

The letters and telegrams and speeches and transcripts of 998 press conferences, filed in row upon row of gray library boxes (250 manuscript collections at last count and still growing), constitute an unrivaled documentation of a period of unprecedented change, just as Roosevelt intended they should.

On the campaign trail in 1932, he pledged bold "experimentation" to overcome the Depression: "It is common sense to take a method and try it. If it fails, admit it frankly and try another." The formal record of all his trials and errors is here for anyone to see, but it is perhaps most memorably recorded in the letters from ordinary citizens. Heartfelt messages from Dust Bowl farmers and jobless men ask for help or give thanks for help already received from one or another of the alphabet agencies, whose mushroom growth signaled a new era in which, for the first time, the federal government was made to accept responsibility for the welfare of ordinary citizens. It was these letters that Roosevelt prized most.

The second great struggle waged by FDR—to persuade the American people to abandon traditional isolationism and see that "our own well-being is dependent on the well-being of other nations far away"—is just as richly documented. Most celebrated, perhaps, are the almost 2,000 letters and cables between FDR and Winston Churchill, the "Former Naval Person." Yet the most momentous of the documents may be a single, short letter from Albert Einstein, written in August of 1939, warning that the Germans had accomplished the fission of uranium and were likely soon to build "extremely powerful bombs of a new type," just one of which "might very well destroy" a whole city and its suburbs. "This requires action," Roosevelt wrote to his aide, Gen. Edwin

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Granite bust, presented by the International Ladies' Garment Workers' Union, adorns library courtyard.

(Pa) Watson, and thereby launched the atomic age.

And everywhere there is firsthand evidence of the breezy confidence and extraordinary attention to detail that made it possible for FDR to preside over a dozen years of cataclysmic change. Across the top of a memorandum from the head of the brand-new Civilian Conservation Corps that estimated the cost of housing and feeding each recruit at $1.92 per day, his scrawl orders that this "absurdly high" figure be "greatly reduced." When his old friend and neighbor Henry Morgenthau jr., Secretary of the Treasury, was tardy in paying his dues to the local Democratic Party, FDR took time to write him a reminder, ending with "in other words, cough up!"

Despite this outward geniality, Roosevelt kept his own counsel. "Never let your left hand know what your right is doing," he once advised Morgenthau.

"Which hand am I, Mr. President?"

"My right hand," FDR answered, "but I keep my left hand under the table."

The charm and guile and sheer force of personality that helped make Roosevelt irresistible when encountered face-to-face only rarely come to life on paper; the relics he amassed are in many ways more revealing of his magnetic personality and magpie mind—restless, acquisitive, omnivorous, fascinated by everything. Even to a frequent visitor, the exhibits are intriguing proofs of a full life lived: the yellowed telegram on which his 54-year-old father noted the arrival of "a bouncing boy"; the ribbon young Franklin wore while a Harvard freshman, marching through a steady Boston rain in honor of his Republican cousin Theodore; the diamond stickpin he designed in the form of the Roosevelt crest, worn by the ushers at his wedding to TR's favorite niece on Saint Patrick's Day in 1905. There is even a case devoted entirely to collars, rubber balls and well-chewed toys that belonged to the playful Scottie whom Roosevelt immortalized in a masterful campaign speech as "my little dog, Fala."

But it is in the five big behind-the-scenes storerooms, filled with items for which there is simply no exhibition space, that one feels closest to the complex and mercurial man responsible for assembling them all. A sweet-smelling cedar closet holds a selection of the elegant Navy capes FDR loved to wear. A hatbox contains the floppy cotton headgear with green sun visor he jammed onto his head when fishing. One drawer is filled with the skins of birds he shot at age 12, each with its handwritten tag; another holds the contents of his desk drawer on the day he died.

For me, however, the most immediately evocative objects are hidden away in a trunk on an upstairs shelf: five pairs of long, heavy steel braces. The shoes to which they are attached look shockingly small, and so shiny and smooth-soled that they appear never to have been worn. But the leather straps that bound them to Roosevelt's shriveled legs are cracked and salt-stained and still seem to smell faintly of sweat, the most vivid evidence possible of the great effort that infantile paralysis demanded of him simply to stand—and of the resolute courage whose existence only his most embittered detractors ever dared deny.

Roosevelt's motives for building his library were surely mixed, but to get to know it is to get to know its builder, which is, I suspect, what he had in mind all along. Few who have ever spent time here could disagree with what the poet Archibald MacLeish said at the laying of the cornerstone 50 years ago: "The records which will be collected here . . . are the records of . . . the man who refused, in the name of his generation, to continue to accept what was no longer acceptable—the man who demanded, for his generation, what his generation had the courage to expect. As such they have the unity which history remembers and even living man can see.

"They belong by themselves, here in this river country, on the land from which they came."

Clockwise from cane, cloak and hat: Four Freedoms poster, Navy F4-U Corsair, Indian pot, swearing-in Bible, campaign buttons, Saudi sword, 1933 Inaugural program, horseshoe, World War I gas mask, helmet.

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DATE
DESTINATION
ORDER
GREETING
May 14, 1989
Mrs. Betty Benson
779 Mills Ave
Chicago, IL 60601
1 Dozen Garden Roses
Happy Mother's Day!
Love, Hank
May 14, 1989
Mrs. Bette Marvin
45 Bank St
Brisbane, CA 94005
Mixed Bouquet
Warmest Wishes on Mother's Day. Marc
May 14, 1989
Mrs. Marion Elder
1597 Corona Blvd
Boston, MA 02134
1 Dozen Pink Roses
To the Greatest Mom Ever. Maddy
May 14, 1989
Mrs. Cheri Baird
321 Park Lane
NY., NY. 10013
Iris Bouquet
Hugs and Kisses
Love, Sheila
May 14, 1989
Mrs R. Schumacher
14 Briana Way
Denver, CO 80205
Potted Mums
Thinking of You, Mom.
Love, Lauren
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By Doug Stewart

In the cutthroat world of toy sales, child's play is serious business

While no one has a foolproof formula for winning over the nation's kids, a $13 billion industry takes a yearly gamble that it can

Richard Knerr, cofounder of Wham-O, well remembers those six frenzied months in mid-1958 when his company sold more than 100 million Hula Hoops. Wham-O had plants on four continents, extruding the whirlable plastic loops around the clock, and still there weren't enough to go around. As hoopless children cried themselves to sleep at night, their parents chopped up garden hose and tied the sections together in desperation. Other people, uninterested in substitutes, hijacked store-bound tractor-trailer loads. It was the fad to end all fads.

People in the toy business offer vague-sounding explanations in trying to account for the toy's runaway success. It had "great play value," they say. It was simple and it was different, they point out. Richard Knerr has a more earthy explanation: forget kids; in an era when Elvis appeared on television at first only from the waist up, Hula Hoops allowed adults—no, forced them—to gyrate in polite company. "If you've ever seen a curvaceous blonde use a Hula Hoop, it's kind of suggestive, isn't it?" he asks. He won't say that his toy yanked America out of the prudish, uptight '50s and into the swinging, hip-shaking '60s, but he's happy if others draw that conclusion.

The life of the modern toy designer is an unending search for the next Hula Hoop, the next Rubik's Cube, the next Teenage Mutant Ninja Turtle. Unfortunately, no one yet has devised a foolproof formula for predicting just what makes a new toy "fun." How does anyone ever know what a child will like? Why does one doll attract lines of shoppers stretching out the door and around the block, while another doll dies a lonely, discounted death?

For the $13-billion-a-year American toy industry, trying to translate fun into cheap, lightweight assemblies of plastic or occasionally wood is a game played for high stakes. A single hot toy can bring in $100 million in retail sales in a single season; a hot toy that unexpectedly goes cold (remember the Cabbage Patch Kids? Teddy Ruxpin?) can help push a company into bankruptcy. As a result, the working environment for Santa's helpers these days is typically one of elaborate market testing, competition routinely described as cutthroat and an almost comical insistence on secrecy. At some of the larger toy companies, a designer must drape a prototype of a new doll or squirt gun with a sheet before carrying it into a hallway.

Still, talented toy designers manage to keep the often burdensome pressures of the toy business from ruining the satisfaction of playing with toys for a living. Jim Routzong, a self-employed toy and game inventor in Massachusetts, seems to thrive on the multiple challenges of making cheap fun. Routzong earns his living by selling ideas to toy companies, which pay him a nickel for every wholesale dollar the finished toy brings in. His one-man company, Joynt Ventures, operates from the loft of a converted farmhouse overlooking the Essex salt marsh. His studio is filled with toys he has dreamed up—stuffed animals, board games, dolls, cars, bike paraphernalia and sports gadgetry.

"Here," he says, pulling packages of vinyl balls from a carton behind a couch, "have some Spit Balls." The golf-ball-size items are molded in the form of different cartoon-style heads, each with a pinhole in its mouth. "You hold them underwater in the bathtub and they suck in water. Then you squeeze them," he says. "They shoot water 18 feet." Routzong, an athletic, self-confident 39-year-old, is an avid racquetball player,

Jim Routzong, toy inventor extraordinaire, bathes with his creations: Spit-It, a frog, and Lock Jaw, a shark.

Photographs by Brian R. Wolff

With its magnetized metal point, the $4 Swirlaround top sticks to metal objects—and with its buyers.

and the early prototype for the toy was simply a racquetball with a hole in it. Puncturing a rubber ball, he acknowledges, may not seem to be the height of ingenuity, but working out the mechanism is typically only a small part of the designer's battle. "The key to the idea here was to come up with the characters," he says as he crunches Lock Jaw, the shark, in his fist and squirts a solid jet of water across the carpet. Other characters include a frog (Spit-It), a drill sergeant (Sgt. Spitz), a monster (Frank-n-Spitz) and so on. Emblazoned on each Spit Ball package is the familiar exhortation: "Collect 'em all!"

Many of the toys sitting on shelves and counters in Routzong's studio are one-of-a-kind prototypes that he's tied, glued or nailed together. Rummaging in a closet among cartons marked Lick Dem Bones, Buzz Off, and Long Bomb, Routzong extracts one of his latest prototypes, a misshapen creature made of dense foam that resembles the Michelin "tire man." When twisted or squeezed, Slo-Mo takes nearly a minute to recover his original shape. "You can do things like this," Routzong says, giggling as he grasps the doll in both hands and gouges its eye sockets with his thumbs, then forces its nose back into its head before compressing the whole creature into a hard, wrinkled pancake. "Kids love gross stuff," he says, sitting back to enjoy Slo-Mo's agonizing recuperation, "the grosser the better." He has no trouble empathizing with his target audience.

Routzong's favorite toy—a Porsche

Routzong obviously likes toys, but what he likes best about them is that a single strong-selling item, nothing phenomenal, can earn its designer $100,000. He doesn't say how much the various toy ideas he's sold have earned him, but he appears to be prospering. Parked outside his studio window is his own favorite toy, a white Porsche Carrera convertible, its license plate reading IDEA. "Ideas are what paid for this car," Routzong explains.

Don Olney doesn't own a Porsche. Even if he had the money, he wouldn't be caught dead driving one. A self-styled "former flaming-radical-'60s-hippie country person," Olney today is the owner, manager and chief toy designer of The Toycrafter, a toy company that makes wooden tops, whistles and kazoos. For Olney, toy making has been a way for him to survive in a capitalist system without selling out completely.

During a visit to his company's humble quarters in an old factory building in Rochester, New York, I watch a dozen craftspeople quietly fashioning toys, including Olney's father and mother, who are sawing train whistles and inserting pegs in tops, respectively. Don Olney, 44, is a jovial man with wavy brown hair and a large, unruly beard. A leather tool pouch, a tape

Toy maker Don Olney of Rochester, New York, demonstrates how his magnetized yellow top blithely spins beneath a spoonful of cereal. "I sell that magical moment when a Swirlaround does *this*," he explains.

measure and a two-note wooden whistle on an overcrowded key ring all dangle from his wide leather belt. His business card is a little wooden top with the company's 800 number printed on the bottom.

"Whistles were our big money-maker for a while, but lately we've been concentrating on the tops," Olney tells me. On a tray between us in his office, he demonstrates favorites from his current line—a top that inexplicably flips upside down after several seconds and keeps spinning, another that seems to turn color, and one with a magnetic base around which flat metal gewgaws slide around and around like ground-hugging satellites. "When I think about what I sell, it's not a top," Olney says as I watch, mesmerized. "I sell that magical moment when a Swirlaround does *this*." He picks up a yellow wooden top, turns it upside down and places its metal point against the underside of a large spoon. With a thumb and forefinger, he gives the top a deft flick, and it begins whirling merrily away under the spoon (above). I burst out laughing at the sight. "That laughter, that's what you pay $4 for with this," he tells me.

Everywhere, I notice, are tops, hundreds and hundreds of tops: tiny plastic tops the size of bottle caps that spin when you blow on them; $150 lacquered, British hand-painted tops; tops with concealed batteries that spin for days; tops in glass cases; tops tacked to walls and in shopping bags on the floor. Almost all of these are other people's tops. Surrounding himself with tops at all times, Olney explains, helps keep his mind focused on the problem of making new and improved variations on a familiar theme.

Olney has no way of knowing who ends up buying his toys from the gift shops and craft stores that sell them, but he assumes that many are adults. "My sense is that people don't get tired of playing with my toys

Doug Stewart writes frequently for SMITHSONIAN, *most recently this year about satellite-TV dishes (October) and U.S. money manufacturing (May).*

For the child who has everything, Fisher-Price offers a two-seater, battery-powered Sportcar for about $300. Well before cars are marketed, children are monitored by the toy designers for unanticipated play patterns.

and toss them in the wastebasket," he says. "They go in your desk"—he neatly tosses a red spiral top into his top-filled middle drawer—"or they go in that box of treasures that sits up in the attic. And when you move, it's one of those damn things you have to take with you. But you take it!" Since he can't be sure whether his customers are children or adults, let alone what they consider "fun" to be, Olney simply tries to please himself, he says.

The country's major toy companies, on the other hand, try as methodically as they can to take the guesswork out of the design and manufacture of fun. For more than 20 years, Fisher-Price in East Aurora, New York, has run its own Play Laboratory for just this purpose. Seated in a darkened room behind a row of one-way mirrors, the company's designers and engineers spy on children who are trying out new toys, both Fisher-Price's and the competition's.

"Somehow there's some magic in a successful toy that catches children's interest, and we have to figure out what that is," Kathleen Alfano tells me as we peer out from our hiding place. She is the company's manager

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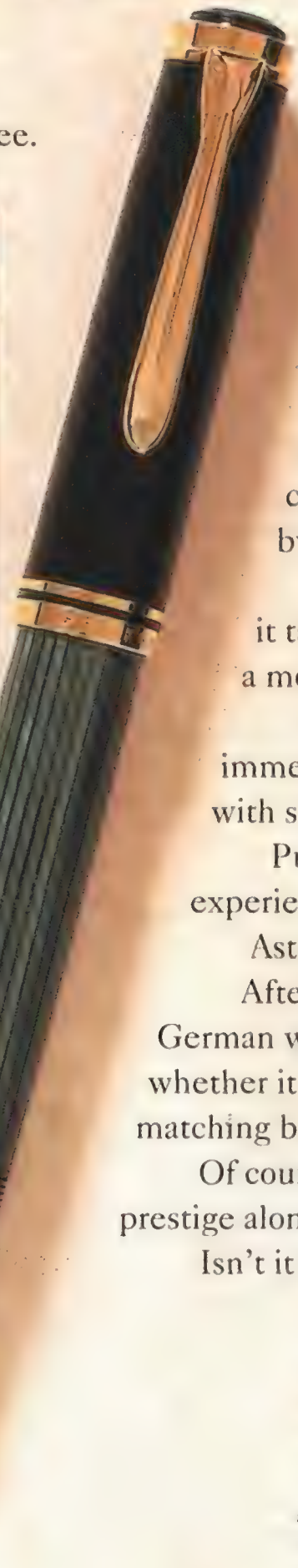

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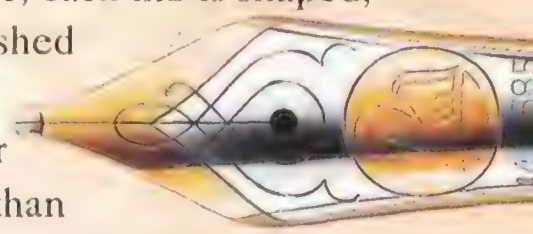

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of the child research department, which includes not only the on-site Play Laboratory but also extensive in-home testing around the country. The waiting list of children for the free 12-session program can stretch up to two years. On the other side of the mirrors from us, a group of toddlers is hard at work, toy testing. One very small boy swings a pink plastic iron by its cord and bashes a toy ironing board with it, looking up to watch the other children as he does so. The lab is a large nursery with bins, shelves and cupboards overflowing with toys: stuffed animals, plastic dinosaurs, dollhouses, toy vacuum cleaners. The tip-off that this is more than an exceptionally well-stocked day-care center is the pair of professional-looking microphones dangling from the ceiling between a set of fish mobiles.

"It's easy to say what *doesn't* work," Alfano comments, "but finding out what makes a toy *work* is harder because children put a little of themselves into it." She has a girlish, singsong voice and the precise diction of an elementary school teacher, which is what Alfano was before coming to Fisher-Price ten years ago. That all-important feature—play value—isn't some ingredient contained in a toy, she explains; play value arises from the way a child decides to interact with a toy, for whatever reason.

Just beyond the mirrors, a 2-year-old girl in a blue tank top has stepped up to one of Fisher-Price's hits of Christmas past, a two-burner kitchen stove with a plastic telephone mounted on the side. The child moves a pot from one burner to the other, then, satisfied, picks up the phone. She punches a few push buttons without looking at the numbers. Then, cocking her head to one side and throwing out a hip, she smiles and says, "Hi ya, Mom!" into the receiver. *This* is play value. If only it could be bottled. Obviously, the more expensive a toy is, the more guaranteed fun a parent expects it to deliver. If one of Don Olney's $1.59 wooden tops holds a child's interest for 20 minutes, that might be well worth the money. A $250-300 battery-powered, rechargeable, sit-down, two-seater automobile, such as Fisher-Price's new Sportcar, had better do more than that. During my visit to the Play Laboratory, the company's R&D staff is watching closely to see how its little guinea pigs take to an advance fleet of the jeeplike vehicles.

In a small parking lot next to the R&D building, five 4-year-olds, three boys and two girls, are motoring about in fast curves and figure eights, fast being about five miles per hour. "They all have them set on high," says Bernie Schaub, the project engineer. "Kids don't want to go slow." This propensity does not, however, mean that a dashboard switch offering a slower speed will be dropped from the final version. "The competition provides two speeds," says Schaub, referring to a toy called Power Wheels. "We have to be equal or better." In other words, some of the features on a toy are not really aimed at the child at all, but at the parents who will pay for it.

Toy cars with added buying incentives

The toy's other extras include a detachable hood with a hollow plastic engine underneath, complete with make-believe spark plugs and a tool kit with five different tools for do-it-yourself auto maintenance. The Fisher-Price personnel are relieved to see that this morning's 4-year-olds are indeed paying attention to these rather expensive features, if not always in the prescribed manner. I notice a small boy in striped shorts lying on his back underneath his car, applying a toy wrench to the air below its underbody, chattering happily to himself. A girl comes to a stop next to him, opens up her car's hood and pulls all the yellow plastic wires from the spark plugs. "There, fixed," she says and hops back in, her spark plugs unencumbered. There are lulls occasionally as all five get out at once to work on their cars. Then, as if on cue, they all get back in and resume snaking around the parking lot.

The toy makers look for much more than whether their pint-size toy testers seem to enjoy a toy. They also look for openings that pinch fingers, seats that don't fit, and play patterns that the professionals, all of them fully grown, never anticipated. When designers noticed children in the Play Laboratory pretending to crack open a competitor's plastic eggs before frying them, they gave their own version a shell that swings open on a hinge and lets a floppy plastic egg tumble out (either fried or scrambled). Alfano notes that Fisher-

Tiny testers have a little fun at Fisher-Price as an adult behind one-way mirror records their every move.

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Price executives often try their best to think like children. "At product-safety meetings," she says, "I've seen adults in suits sitting around a conference table teething on things, trying to see if they can get any parts loose."

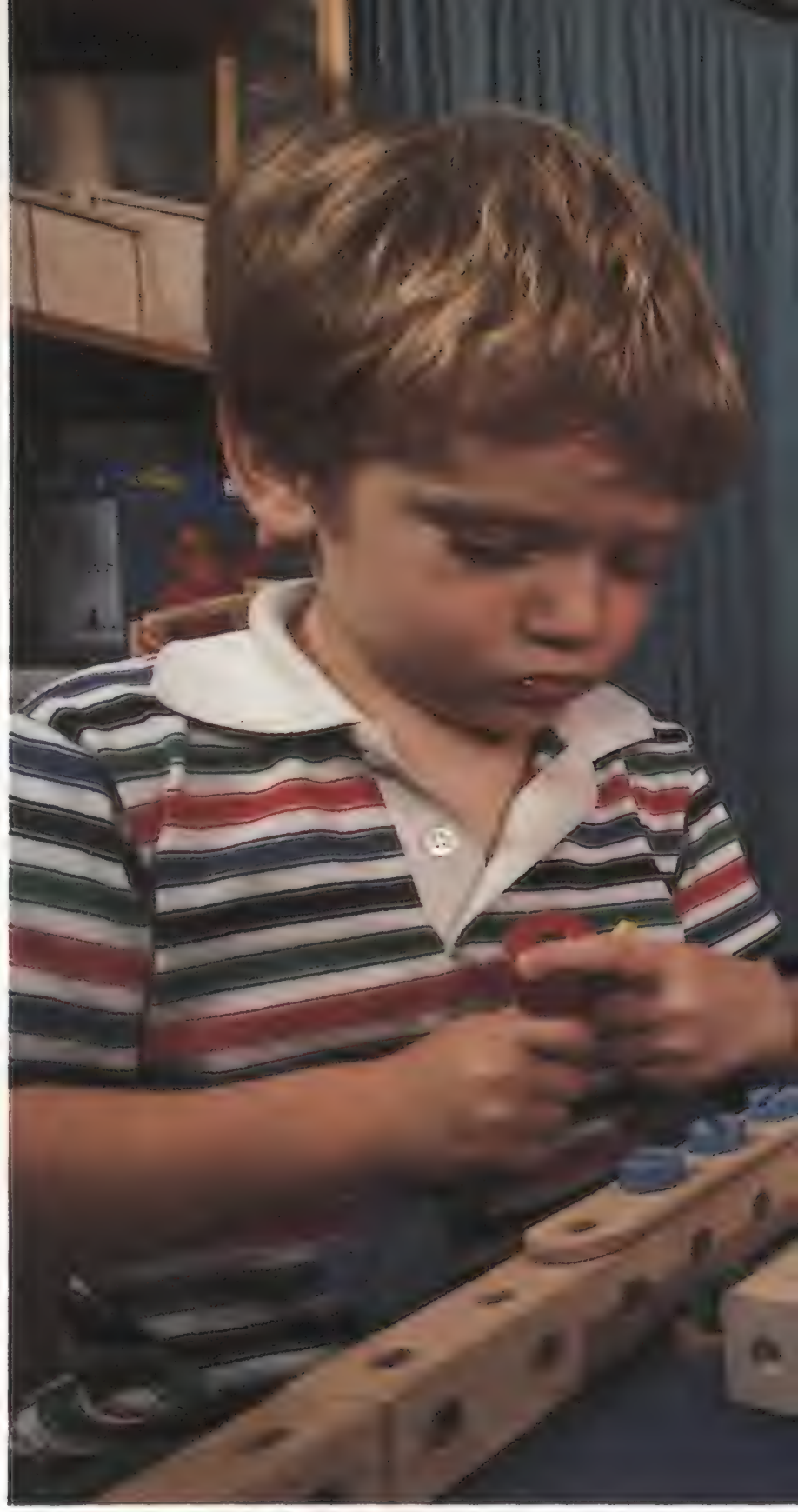
Most safety testing, of course, is far more rigorous than that. Fisher-Price has its own quality-control lab, where every toy—and every piece of every toy—is methodically abused. There, I watch a contraption not unlike a medieval rack apply 278 pounds of tension to the front wheels of a pair of bright plastic roller skates (p. 82), at which point it rips them off with a jerk. Next to the machine is a pile of boxes containing toys waiting to be torn asunder; every part that *can* be detached *will* be detached and its point of failure recorded. Another machine does nothing but bite things, using a 50-pound weight mounted over what looks like a steel clamshell but simulates teeth. Taking a well-deserved rest is a machine that just finished bouncing a 25-pound weight in an infant's jumper seat a million times in a row. As I pick my way through the lab, I'm surrounded on all sides by hisses, clicks, creaks and whines, the sounds of toys being tortured.

The house that Barbie built

Naturally, life would be easier for toy designers if they could fall back on the same materials year after year. But the toy business, it is often said, is more like the fashion business than anything else. Each season calls for a trendy new line, or consumers grow bored. To keep up with the times, Mattel Incorporated, the house that Barbie built, has gone through 75 million yards of fabric over the past 31 years, making it the fourth biggest maker of women's garments in the United States. A $1-billion-a-year corporation like Mattel isn't about to risk its very existence on the whims of this year's Christmas shoppers. So instead of gambling on new toys, Mattel bets on new clothes for old toys, the old toy being Barbie (see cover). More than 100 new Barbie outfits are introduced each year (though the top seller, year in and year out, is the bridal gown), along with accessories from pogo sticks to credit cards.

With her va-va-voom figure and cascading locks, Barbie is an American icon, meriting an Andy Warhol portrait and a gala birthday party, complete with dancers and klieg lights, at Manhattan's Lincoln Center last February. Ninety percent of all American girls ages 3 to 11 own one or more, usually more. If all the Barbies sold since 1959 were laid head to high-heeled foot, according to one of the company's pale-pink press releases, they would circle the Earth three and a half times. Yet despite her mainstream appeal, Barbie is always hip to what's happening.

"Barbie *is* change," says Don Clarke, Mattel's vice president of design and development of girls' toys, when I ask him how Barbie has survived and prospered for 31 years. Clarke is not my image of a girls' toys designer. He's a robust, outgoing rock climber with a turned-down mustache and tinted aviator glasses, but as far as I can tell, he thinks Barbie is super. "You can pull out a Barbie from any year over the last 30 and see how the country has changed," he says. There was Barbie the model (1959), Barbie the career girl (1963), Barbie the surgeon (1973) and Barbie the aerobics instructor (1984). Showing me around the girls' toys division at Mattel's huge headquarters near Los Angeles, Clarke pokes his head into a designer's office



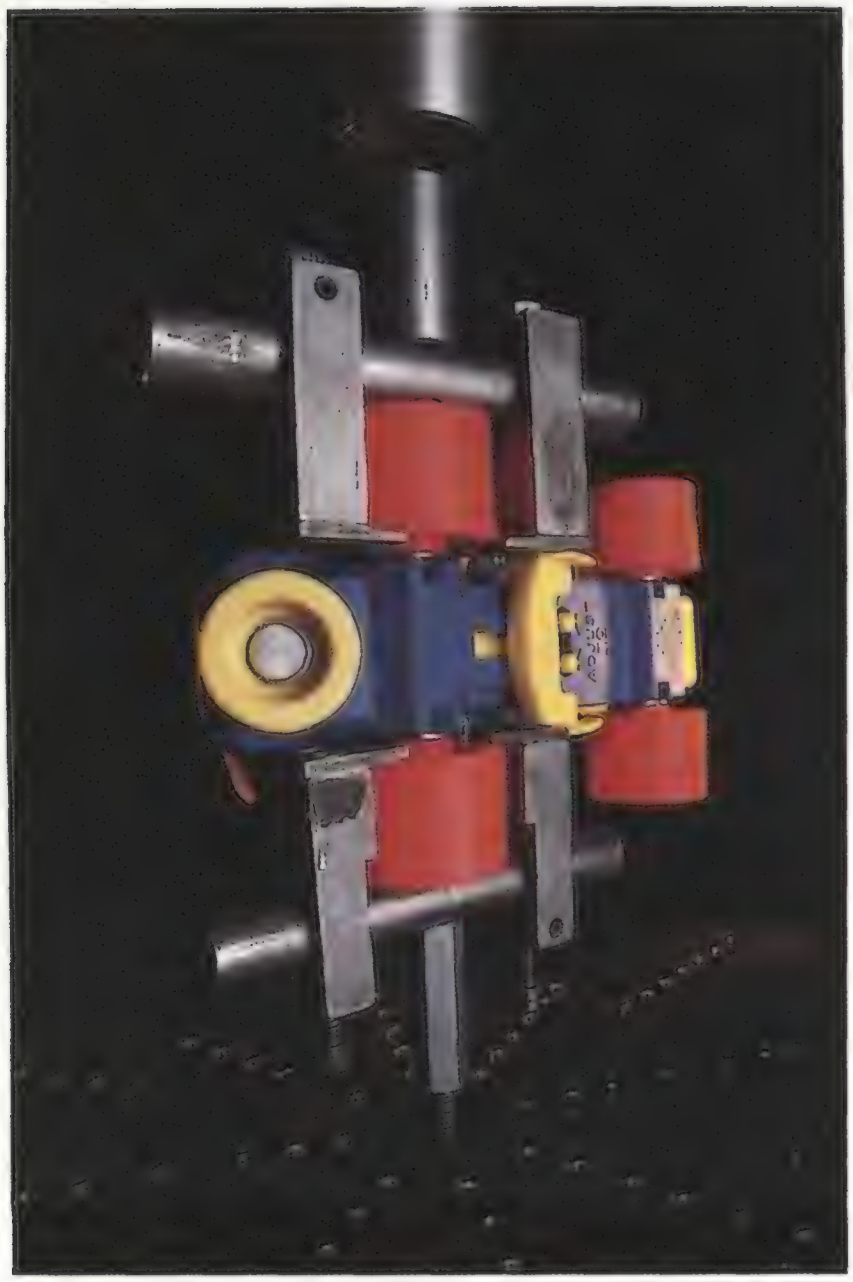
The Dragon's Nest, a small shop in Newburyport, Massachusetts, advocates a play-first-pay-later system.

From left, consumers Daniel, Michael Boufford and Tom Sullivan check out the reliability of a Brio tool set.

and points out a large clay model of a fastback sports car. "This would have been 'the Barbie,' " Clarke says, "if it had ever gone into production. But in tests, girls looked at it and said, 'That's not a Ferrari.' " These days, 3-to-8-year-old girls know their cars. And not just any cars. Corvettes and Ferraris are the Barbie owners' favorites. Mattel knows this for a fact: it has market-research specialists who are paid to know such things.

The girls' toys division keeps nine fashion designers busy full time, along with a roomful of hairstylists. To stay au courant, they loiter in malls or stake out the entrance of Knott's Berry Farm, an amusement park, jotting down notes on what's new in teen fashions. Such forays are responsible, for instance, for Barbie's 1989 cutting-edge black-bicycle-shorts-with-miniskirt combination. Once a design is settled on, the exact pattern is entered into a computer and beamed via satellite to Mattel's factories in Malaysia. Clarke leads me through a room packed with fabric samples. "We design all our own prints," he says. "Barbie doesn't look good in large, people-size prints." Many of the textiles on the shelves around us would be unlikely to appear on a real person—metallic-looking weaves in pink and silver and Day-Glo.

Barbie herself must at all times appear chaste. To make sure, designers avail themselves of an instrument



A Fisher-Price roller skate endures testing; at 278 pounds of tension, its front wheels finally came off.

known as the Barbie Exposure Gauge, which keeps tabs on her bust and bottom. This is a headless Barbie doll with blue ink covering its anatomically incorrect chest and a blue line running across its derriere. "If any blue is exposed when Barbie sits down, or when you look down her blouse, or when she undergoes the twist test"—Clarke grabs Barbie in both hands and twists her like a pepper mill—"then that costume is unacceptable."

Throughout Mattel's two R&D floors, designers and engineers are busily wiring up battery-powered gadgets or putting the final touches on the forever-pink Barbie boxes. A group of buyers from Toys "Я" Us, the country's number-one toy chain, is arriving on Monday for a first look at Mattel's Christmas 1990 line, and the pressure is on. Since Mattel, like the Pentagon, works so far in advance, secrecy is crucial. At one point, Clarke hands me an object that I shall refrain from describing here. "If you mention this in your story," he tells me, "hit men will be sent to track you down."

In the toy business, the holiday season is a grim time of reckoning, a period when 60 percent of the public's toy dollars are spent. Navigating the aisles of a toy supermarket in the days before Christmas, I found, can be harrowing for the consumer as well. To the sounds of shrill holiday music and toppling cartons, shoppers race their overflowing carts past towering stacks of Motorized Uzi Carbine Waterguns, Electronic Infrared Blaster Battle Sets and other TV-promoted toys. Seeking refuge from the tumult, I stop in at a small, old-fashioned toy store in my neighborhood, the Dragon's Nest in Newburyport, Massachusetts.

Seeking refuge in a Dragon's Nest

The Dragon's Nest specializes in toys you never see on TV. The tiny shop is jammed with 20 people in it, but at least kids are free to play with the toys. There are bubble blowers, puppets, origami and those mysterious little cans that moo when you turn them upside down. A young married couple in matching motorcycle jackets are shopping for gifts for a niece and nephew. They're looking for something more stimulating, they say, than the usual dolls and stuffed animals. "The best toy we ever bought was a gardening set for my niece when she was 2," the woman says. "It had a little plastic hoe, a shovel, a watering can and a little packet of seeds—she loved it. She went outside with her father, and they planted the seeds, and she watched the marigolds grow." Right now, they're looking for something bug-related for the nephew. "We bought him an ant farm last year," the husband says. "He's just fascinated with bugs."

Shoppers like these are the kind of folks who keep fringe toy companies like Uncle Milton Industries in business. If the couple bought an ant farm, chances are it was an Uncle Milton Ant Farm. Based in Culver City, California, Uncle Milton Industries is a toy company that no one has ever accused of being part of the fashion industry. It offers a number of products from toy soldiers to geology kits; but its Ant Farms—which, like Barbie, have been going strong for more than 30 years—account for two-thirds of its sales. An Uncle Milton Ant Farm, for those of you who never owned one, is a sort of fishbowl for Formicidae: a pile of white sand squeezed between two Plexiglas windows and held together by a green plastic frame. Children buy the Ant Farm at a toy store or pet shop, then mail in a coupon (a "stock certificate") and receive by return mail a test tube with air holes that contains 25-40 live, if groggy, ants.

"Ants are the world's tiniest engineers," Uncle Milton, aka Milton Levine, tells me when I ask him what the play value is in looking at ants. We're sitting in his office, staring at a $20 Giant Ant Farm on his

desk. "They can dig tunnels without supports," he says. "They can pick up ten times their own weight. They can do things no human can do." White-shoed and 76, Uncle Milton has the loud, gravelly delivery of a vaudevillian or maybe a sideshow barker, and he bears a slight resemblance to Groucho Marx. "There are 45 ants in here," he says, peering at his Ant Farm, a magnifying glass at the ready, "and every one of them is working. I mean every one. If people worked like ants, everyone would be a multimillionaire." He points out two little brown corpses buried in the coarse white sand in one corner. "I've noticed when an ant dies, pallbearers usually bury it in a corner," he says. "I don't know why. Then the last one often goes there to die by himself. It's one of the mysteries of their civilization." Levine remembers placing his original Ant Farm prototype on top of his television set back in 1956. "And guess what? We stopped watching television! We'd get up the next morning to see what they'd done overnight."

Levine buys his ants from local ant pickers for 1.5 cents apiece. His company has sold more than ten million Ant Farms to date, and sales grow steadily year by year. "I love ants," says Uncle Milton, delighted with his product that never goes out of style, come Slime or Silly Putty. "They're the greatest things on Earth. I've got three kids, and ants put them all through college. I never even step on ants, I tell you. Never."

Father of ant farming, Milton Levine of Culver City, California, never gets tired of watching Formicidae.

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By Phil Patton

'Arader is up again!' and his galleries are in full bloom

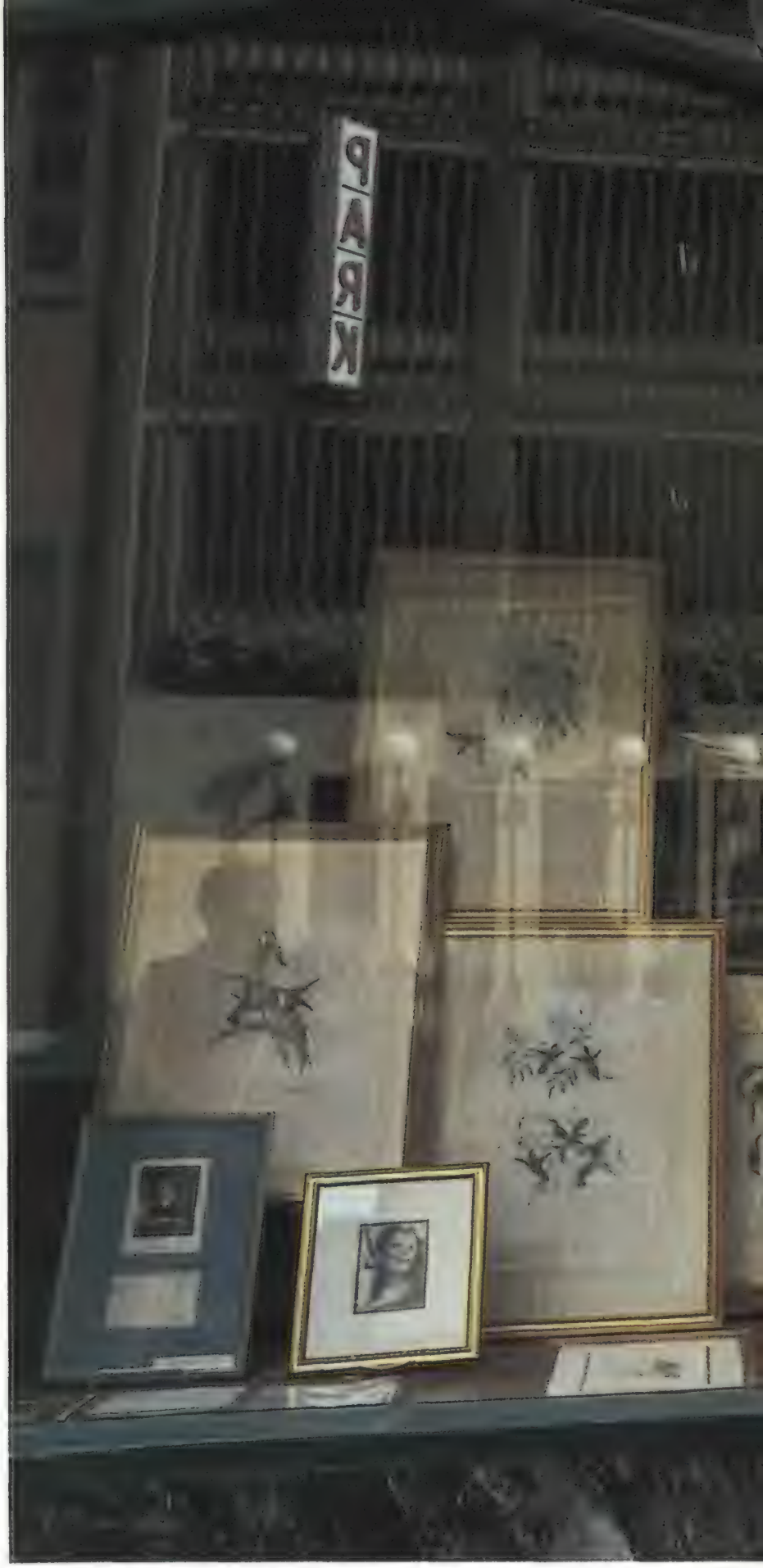
Relentless energy and a determination to win have driven the audacious dealer to dominance in the world of rare prints, maps and books

On Wednesday mornings well before the sun is up, a man emerges from a large, stately house on Philadelphia's Main Line and slips into the driver's seat of a black BMW 750. This is the V-12 model, top of the line, and it slips through the quiet roads toward the Pennsylvania and New Jersey turnpikes, speeding up on the big highways that take it north to Manhattan.

W. Graham Arader III is on his way to the New York gallery from which he has shaken up the once-stolid, self-satisfied business of dealing in antique maps, prints and books. In an industry that has traditionally regarded itself with all the casualness of a leisurely Sunday drive, Arader has applied the rules of hard-driving business. In the process, he has become its best-known and probably most powerful figure.

In the car, Arader, whose face, at 39, suggests a mixture of the Byronic and the pugilistic, is already on the cellular phone talking to Europe. Along with the phone, the car contains a radar detector. Both items are indications of the velocity at which Arader, who also has galleries in Philadelphia, Chicago, Houston and San Francisco, is accustomed to moving. He seems a man in suspension not only between his Philadelphia home and his galleries, but also between one phone call and the next.

To some, he is a man who has broken all the rules of this gentlemanly business. He was kicked out of a trade organization, the Antiquarian Booksellers Association of America, for treating a fellow member badly. His suit for readmission failed and cost him $80,000 in legal fees. And if you listen to the man himself, there are some who believe things still darker about him.



Habitually fast-paced, Arader switches with ease from one client, one problem, one gallery to another.

He has been accused of greed, he says, and it bothers him. He loves the things he buys and sells. In any case, to reduce Arader to greed is like explaining away as mere reproductive efficiency the effulgence of the lush flowers in the botanical prints for whose sales he is famous. What Arader will admit to is possessing that radar detector and that powerful car. That, and a busi-

Window of his Philadelphia gallery boasts array of the antique prints that have won him wealth, notoriety.

ness of $15 million a year, and an inventory that cannot easily be valued.

The name is pronounced "Uh-*raid*er," and it is as a kind of piratical raider that he appears to many in the print business. He figures in the world of art dealers as the leveraged-buyout boys do in the world of corporate finance: like them, he wants to shake things up, replace staid management with a mile-a-minute activism. Like them, too, he has based a good part of his success on playing the difference between the price of a whole book or collection and what is known in the LBO world as its "breakup value."

Literally breaking up things—atlases or books of prints—is one thing Arader has been criticized for. Almost everyone in the trade does it, but few have been so explicit about it. That is why, one Sunday not long ago, Arader stands in his New York gallery posed like a camp counselor surrounded by eager

Photographs by Bill Ray

Always maximizing the moment, Arader talks to client on car phone, grabs a quick bite as he heads home.

Arader, assistant Mary Beth Reiss, are glued to phones in New York office; everything's for sale, even desk.

campers. In his hand he holds a sheaf of envelopes representing an order of choice. It is a Sunday in late spring, and Arader is presiding over the disbursement of a suite of prints by Pierre-Joseph Redouté—*Choix des Plus Belles Fleurs*—issued in Paris from 1827 to 1833. Simultaneously, he is selling a group of watercolors of exotic birds by Emile Pauquet.

This is a syndication. For figures that begin at the sticker price of a modest import automobile, Arader's clients have bought shares of the two sets of prints. Each then draws a number—contained in the envelopes in Arader's hand—indicating the priority of choice. It is retailing with a touch of gambling to it. It is also a technique Graham Arader invented.

Arader, flanked by his eager assistants, is also advising his clients on their choices—"Honey, are you sure you want that one? It's lovely, but a bit foxed [discolored]"—and making selections for absent clients. He has drawn numbers for the unsold shares himself, and those prints will go into his general stock. For this reason, he is constantly in demand, shuttling from the inner room, where the flowers are ranged on walls around a table full of pastries and fruit—the peaches and apples on the table echoing their French kin on the walls—to the outer one, where tropical birds flash their emerald and orange and yellow feathers.

"Who's up now?" one assistant asks.

"Arader is up again," another answers.

"How come Arader gets all the good numbers?" jokes a client.

Redouté—and syndications like this one—helped Arader make his reputation. In the fall of 1985, he stunned the world of art auctions, where his most driving and competitive instincts emerge, by buying the original watercolors for Redouté's masterpiece, *Les Liliacées.* Sotheby's planned to auction off the flower drawings one by one; but Arader created one of his syndicates and bluffed away rival bidders, who were reported to include the Bibliothèque Nationale and the Getty Museum. He bought the whole group with a single, unchallenged bid of $5 million. He was prepared to go as high as $8.8 million.

Pierre-Joseph Redouté, whose chief patron was the empress Josephine, was probably the greatest flower illustrator ever—the Audubon of flora. He is the sort of blue chip Arader likes to deal in. The copy of the *Choix* (as it is abbreviated in the trade) that he is syndicating on this particular day came from a London dealer. It was the third that Arader had sold, the first that he had syndicated. Now, as every day, he is busy on so many fronts that he seems to have syndicated himself as well. He switches constantly from one field,

Author Phil Patton is currently working on a book on American design. He last wrote for SMITHSONIAN *on photographer John Margolies in November 1988.*

On Madison Avenue, just across from his New York gallery, dealer loads car with prints and paintings.

one client, one problem, to another. His consciousness itself seems to occur in serial images. Watching him brings to mind the term applied to computers that can do many things at once—"multitasking." He does everything intensely. He tends to speak in extremes and absolutes.

"I do really exciting things every day," he says. Right now, for instance, he is "trying to buy the greatest collection of American Impressionist paintings around—worth $50 million."

As he switches rapidly from one subject to another, from one client to another, from one controlled tone to another, he paces around—one step, two steps, pivot—on the leash of the telephone cord.

"What day is it?" he interrupts himself to ask.

A call is put on hold while he screams, "Will someone empty my trash basket!" and an employee scurries in to do so. A thought of the moment must be dealt with that moment. As carefully as prints and maps are handled, telephones take a good deal of physical abuse from W. Graham Arader III.

The dealer trusts his immediate judgment about almost any matter, large or small. His intensity may be at its most extreme—and yet most controlled—at auctions. His competitiveness at them is legendary—like a squash match, bids bouncing off the walls, pressure mounting with rallies. This may be because, at auction, he is going head-to-head with the big auction houses—his bêtes noires. Once, Arader accused an auctioneer at a leading house of taking nonexistent bids to "bid him up." Accused him, that is, out loud in the auction room. The auctioneer reopened the bidding on the item, and Arader wound up getting it after all, for less.

Arader's treasures confront you immediately as you enter his galleries. In the lobby downstairs in New York, right now, hang early maps of America. On the walls of the main gallery, Audubons—the warhorses of the business—including two of the most sought after, *Hooping Crane* and *Brown Pelican.* Among books, you can buy Lieut. Col. Banastre Tarleton's apologia for the failure of British forces in the South to round up Francis Marion, the Swamp Fox, during the Revolutionary War. You can find Captain Cook's voyages, as recorded in George William Anderson's *A New, Authentic and Complete Edition of Capt. Cook's Voyages Round the World.* You can buy botanical prints of the Amazon and zoological ones of Africa. You can buy a book of 47 hand-colored plates of trogon birds, and maps from the age of discovery—Ortelius and Blaeu. Even in the restrooms you find prints—moths and birds—with prices neatly noted.

But more than anything else, you see flowers on Arader's walls. His success has coincided with certain fashions, for example, flowers as a popular decorative motif. Ralph Lauren, whose flagship store sits in the old Rhinelander mansion across the street from

Map expert Henry Taliaferro, head of the New York gallery, holds 1570 map of world by Abraham Ortelius.

Bob Grabowski, director of rare books, shows off illustration from 1855 book on toucans by John Gould.

Signatures of the famous surround organization's autograph expert, Neale Lanigan, in Philadelphia.

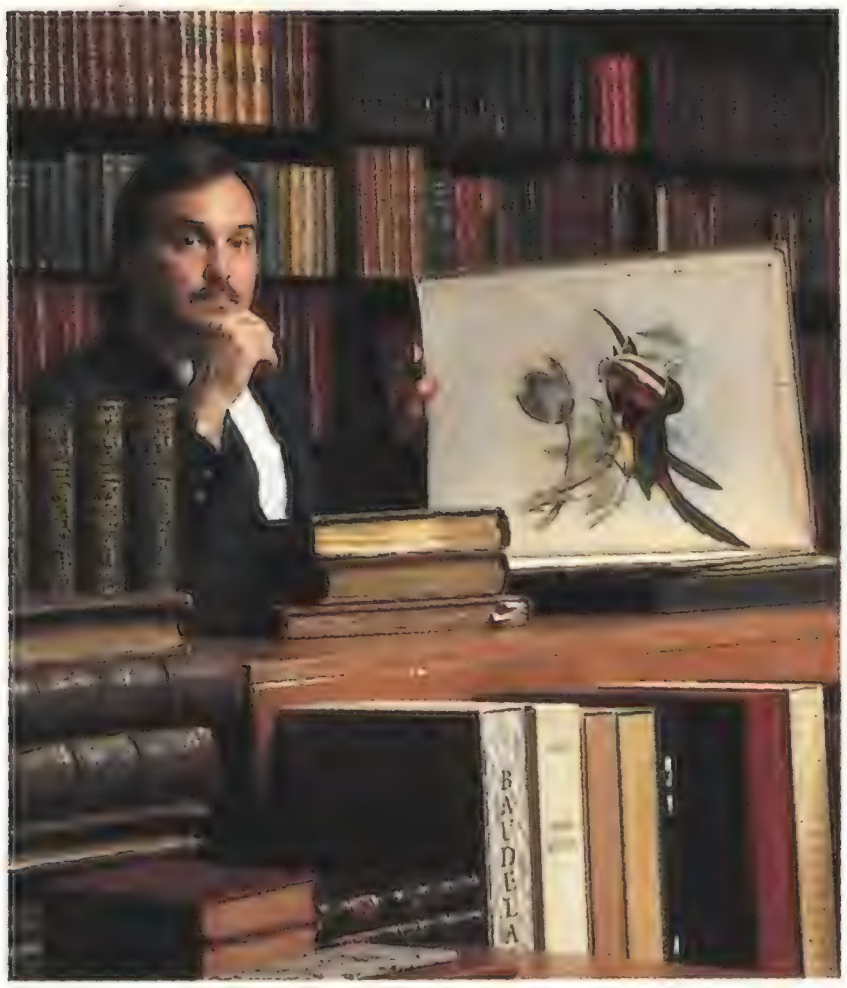
Arader's New York gallery, is among those who have helped establish the English country look in fashion and furniture. Arader's flower prints and maps fit the style well. But his success also has to do with the fact that he focuses on the blue chips of map and print collecting, which are themselves blue-chip categories. You will find no 1930s cookie jars on Arader's premises, no comic books, no streamlined toasters. "Collectible" is not a term used favorably there.

"Arader is up!" Now it is his turn to pick one of the Pauquet watercolors for a doctor with a Japanese surname. "Another hummingbird for Dr. S." Arader hesitates for only a few seconds, deciding between two, one arm folded across his waist, the other fixed on his chin.

Arader's wife, Valli, who is in charge of publicity and the decor of the premises, speaks in the accents of her native Atlanta as she looks at the prints with her husband. "Ooh, look at these cute little things," she says, indicating a small grouping of hummingbirds. The hummingbird Arader has just chosen joins others in a desk with flat file drawers; clients' names are attached to each drawer, written on yellow Post-it notes.

Like the *Choix*, material comes to Arader from all over the world, morning after morning, brought in by advertising and the driven efforts of his 80 employees. One day's net in the New York gallery might include, say, an Audubon wood ibis, a set of prints of Indian chiefs, a Currier & Ives portrait of Lola Montez, a painting by Carl Wimar and a transparency of an Albert Bierstadt painting another dealer wants him to help sell. In the afternoon he will go to auctions in search of more material, and he must prepare. He rummages frantically through a black briefcase almost as big as the BMW. "If I don't find this catalog . . ." he intones in a voice at first ominous, then almost panicked.

In front of him sits the Wimar painting—of a buffalo on the plains. The more you look at the animal, how-



Furniture and decorative arts specialist George Glazer stands behind group of gallery wares in New York.

ever, the harder it becomes to extract a sense of its body from the large brown shapes of the paint. Buffalo anatomy is by nature fudgeable: you can hide a lot of ignorance beneath the creature's shaggy outline, but not this much.

Arader suspects that the buffalo has been repainted. He calls for a black light to see for sure. Under the almost radioactive-looking beam, the new paint shows up clearly. He picks up the phone. His earlier offer no longer goes, he tells the owner of the painting. "I am sending it back," he pronounces, "with great alacrity."

Another day, it would be a set of Audubon prints from Texas. Arader's Houston office, in these times of the depressed petroleum industry, is mostly buying. The color of the Audubons has faded, and Arader, at first polite, is clearly encountering someone trying, for a change, to sell *him*. He listens briefly.

"That may do in Texas," he says of the blanched Audubons, "but my clients in New York were not born yesterday." He listens for a while longer.

"Well, know that I was not born yesterday and I am not going to buy them." He switches instantly to another call.

He has three potential clients on the line for the Bierstadt. "These are people worth $500 million each," he says reassuringly to the dealer who brought the painting to him.

Arader has cast on the whole art world an interrogatory light no less intense than that which he turns on individual objects. "I gave a talk recently about the future," he tells me. "I have some notes." A vain, rummaging search of the huge black briefcase follows. The document in question is not in the New York office; it must be faxed from Philadelphia. Arader picks up the phone and orders it done.

More service, more personal attention

"Ah, yes, here," he says three minutes later. He reads the notes almost word for word, as if giving a lesson.

The view contained in the lesson is of a movement away from the genteel world where no gentleman appeared at an auction but sent his dealer instead, nor dared inquire about such gritty details as reserves or provenance. In the future, Arader asserts, museums will lose government support. He also predicts that the Europeans will come into collecting, and dominate. "They have looked on jealously ever since World War II, and now they have the money to get back in the market." This view of the future is not optimistic for the big auction houses. For them, he sees shrinking commission rates. People will demand more service, more personal attention. It sounds suspiciously like a world where the Araders—the fast-moving, service-oriented art dealers—will supplant the big houses.

Forever the consummate salesman, Arader chats with clients Mr. and Mrs. John Crowe at annual Winter Antiques Show in New York City. Event is most important of its kind in the United States.

These auction houses—by which he means Sotheby's and Christie's—are a subject to which Arader often returns: the competition against which he measures himself. They can, he says, put thousands of color catalogs into collecting homes all over the world. "I can't compete with that."

The auction houses sell retail, via color photographs and telephone, to the wealthy collector in, say, Brunei. Arader competes with speed and service in buying and selling. "A check by the end of the day" is a phrase one hears often in his office. The auction process, by contrast, can still take as long as a year.

Some say that he has created a new market for maps and prints—decorators and advisers, corporations and yuppies. He doesn't like to put it that way—it suggests nouveau riche connotations. In his view, he simply went into markets no one had previously worked.

A woman with a pad bearing the letterhead of a well-known brokerage firm browses among the Redoutés, marking down her choices. Nearby, a tanned couple contemplate their options. "Are you nervous?" the man asks his wife as their turn approaches. "Nervous? I feel like I'm about to have a baby."

There is a rough pecking order to the choices among the flowers: the bouquets first, then the roses and the lilies. The fruits—peach, apricot, apple—although lush in color, with leaves a steely, almost military, green, rank lower.

The whole process reminded me of something else. By chance, later that afternoon I watched a professional basketball game on TV where, at halftime, the network broadcast the league's draft lottery for picks of college players. It struck me then: Arader's syndications are like the draft system in sports, with each franchise picking the best available item left on the board. It is an exciting game within the game.

Games and competition are what excite Arader. In addition to his main business, he plays currencies and securities and oil drilling. Not long ago, he brokered a deal for natural gas turbines for a gallery client.

The vast acreage of advertising space he buys and his rapid patter lead him to be depicted as a sort of used-car salesman or a fast-talking TV pitchman. But that is from an older, more aristocratic perspective. He would not even have been in a position to become the industry's bad boy if he had not come from a solidly respectable background: Main Line Philadelphia, Hill School, Yale. His name, with the Palladian pediment of its inaugural "W" and the stately colonnade of its terminal numeral, announces a respectability as bright as the polished letters in which it is rendered at the entrances to his galleries.

It began with maps, whose appeal is more than simply artistic: these are documents, images with a use as well as a beauty. "Something George III held in his hands to study what was happening in the Colonies," Arader declares, has far more appeal to him than, say, the average contemporary art print. (One of his particular bêtes noires is the overvaluation of contemporary art.) Maps and natural history prints possess a documentary usefulness in addition to their purely esthetic appeal.

He was in the right place at the right time: in the late 1970s and '80s, map prices increased tenfold. Many say he had as much to do with the increase as did any other factor. In a business where prices had risen gradually, he instituted quantum leaps—and others followed.

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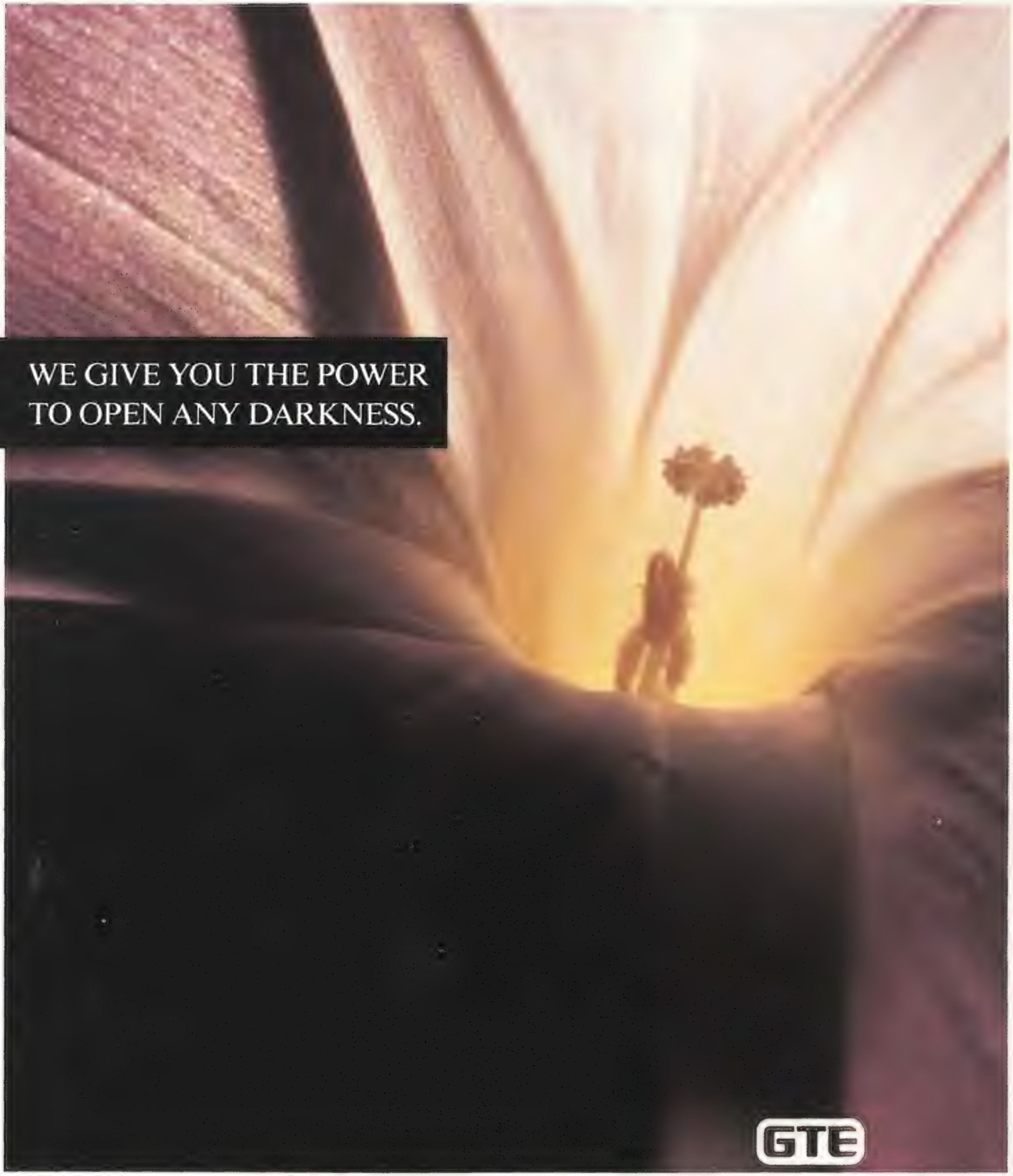

THE POWER IS ON

Even in dealer's sumptuously furnished home, Oakwell, everything is for sale. Wife, Valli, did the decorating.

He got started at Yale, where, in the intervals between squash matches (he became captain of the team), he ventured into the Beinecke Rare Book and Manuscript Library and entered himself in tutelage with the map expert Alexander Orr Vietor.

After flirting with—of all professions—tree surgery, he obtained a loan from his father, an investment banker and also a map collector, and dived headlong into the business of dealing in maps. He traveled from antique show to antique show—not in a BMW, but in a station wagon with his wares in back. At one show, he recalls, he did so poorly that fellow dealers had to take up a collection to pay for his gasoline home. Then, he became famous for raising prices. Now, he talks about underselling the competition. Then, he spent months on the antique-show circuit. Now, he sends emissaries to about 50 shows, instead of a hundred, and visits only a couple himself.

By 1977 Arader was doing well enough to buy a mansion (like something out of an old engraving he might sell) called Ballygomingo. For a while, living quarters and corporate headquarters shared the house. After he got married, in 1983, he bought another house, Oakwell (above and opposite). Ballygomingo remains his vast warehouse of treasures, the aircraft carrier of his fleet, while Oakwell is his flagship.

Partly out of his own boredom with the field, he expanded from maps—whose market came to a standstill in 1980 and remained stale for several years—into prints and books and paintings. Most recently he has begun to focus on furniture.

Arader is like an up-and-coming discounter taking on Bloomingdale's and Macy's. He excoriates Sotheby's and Christie's as "retailers," while expressing gratitude to them for broadening the market, raising prices and, he says, "making me rich." He views his team of experts as a sort of personalized Sotheby's, almost a museum staff in miniature. Expertise, in Arader's world, is itself almost a commodity—one of the services, like framing and shipping, that he sells in addition to prints, maps and books. "Experts working as your personal curators" is his slogan, expertise his product. That and his own eye—the source of those rapid choices among hummingbirds and birds of paradise, lilies and roses—in which he believes implicitly.

"Talk to my experts," he tells me. These include Henry Taliaferro, a Texan, who came from a competitor to revitalize the map department in 1984. George Glazer was a corporate lawyer and collector until, about a year and a half ago, he decided to join Arader as his furniture expert. Esther Sparks, of his Chicago office, was a curator of prints and drawings at the Art Institute of Chicago—"a beloved figure," Arader calls her. Bob Grabowski, director of his rare books department, and Neale Lanigan, his autograph expert, are both in the Philadelphia gallery.

These specialists assure him of top quality and authenticity. But even with his experts, even driving himself at top speed, Arader contends it is still tough to compete with the big guys.

A complete Audubon double elephant folio has recently gone at auction for $3.6 million—a figure whose significance for Arader lies in the fact that it is higher than the breakup value of the book at going prices. But he promises to maintain his prices: he will simply undersell the big guys, he declares.

His room for expansion seems limited. The auction houses, which once were the sources for dealers, are now themselves the dealers for such categories as the Impressionists and Old Masters, he says. The $50 million American Impressionist collection that he hoped to get eventually slips away. In furniture, he complains, the market is made by a virtual handful of collectors—and furniture, he stresses, is devilishly easy to fake.

He seems, for a moment, a little in the dumps. He wants to slow down, he says. He insists he will not enter the Japanese market. "Not Tokyo—I'm too old." But for Arader such moments are rare. In the middle of a syndication, all this is forgotten.

"Arader is up!" comes the call, and he tugs his belt above a thickening waist, narrows his eyes, mounts his chin upon his hand and begins to scan the wall for his next choice.

Arader, wife and son, Walter, stand outside Oakwell. The 11-acre estate is in Villanova, Pennsylvania.

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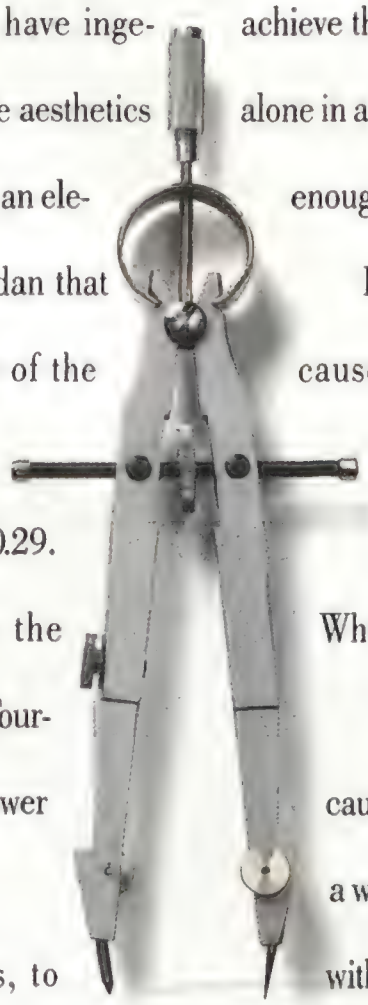
Not much of anything because our engineers have found a way to combine extreme power with extreme quiet.



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Opposite: Diane and Arlen Chase kneel beside altar that records Caracol's A.D. 800 conquest of Maya sites. Canaa, the sacred complex (above), grew over centuries as rulers added rooms, tombs, temples and pyramids.

By Nadine Epstein

From a remote jungle site, a trail of striking clues

In Belize's backcountry, two archaeologists solve the Maya's puzzling Middle Classic hiatus and document radical change in their warfare

One February morning in 1986, archaeologists Diane and Arlen Chase were browsing through a ball court at the Maya site of Caracol in Belize. Suddenly, there was a *clink* as Arlen's machete, swung at a patch of brush, hit a solid object just below the surface. Scraping away the light layer of soil, he uncovered a circular white altar, broken, eroded and not particularly beautiful. It was incised with concentric rings of Maya hieroglyphics. The altar turned out to be a major find: evidence suggests that it provides the solution to a conundrum that has baffled Mayanists for decades, that of the Middle Classic hiatus.

The altar was not to be the Chases' only important discovery. The site is proving even larger than Guatemala's famous Tikal and has yielded clues to drastic changes in the Maya practice of warfare. It has also raised interesting questions about a much more prominent role for women in Caracol society than had been hitherto suspected.

Both Chases, currently at the University of Central Florida (UCF), chose careers in archaeology while still in their teens. Arlen, the son of a U.S. Army intelligence analyst detailed to SHAPE (Supreme Headquarters Allied Powers Europe), grew up in France. The husband of one of his schoolteachers was a paleontologist who gave Arlen a sack of sweepings from a dig in southern France. "It had wonderful fossil fish vertebrae and teeth. I was hooked." Later, during his last year of high school in California, a three-week field trip in Guatemala to map a little-known site turned him to the Maya. He enrolled in the University of Pennsylvania, knowing of its strength in that area.

Photographs by Tom Ives

Robert Schyberg

Partial excavation of Caracol's epicenter was basis for this model; the built areas extended much farther.

Chases and staff (center) excavate within a medial door, formal entrance to the architectural complex.

Map shows the relationship of Caracol, deep in the Belizean jungle, to its archenemy, Tikal.

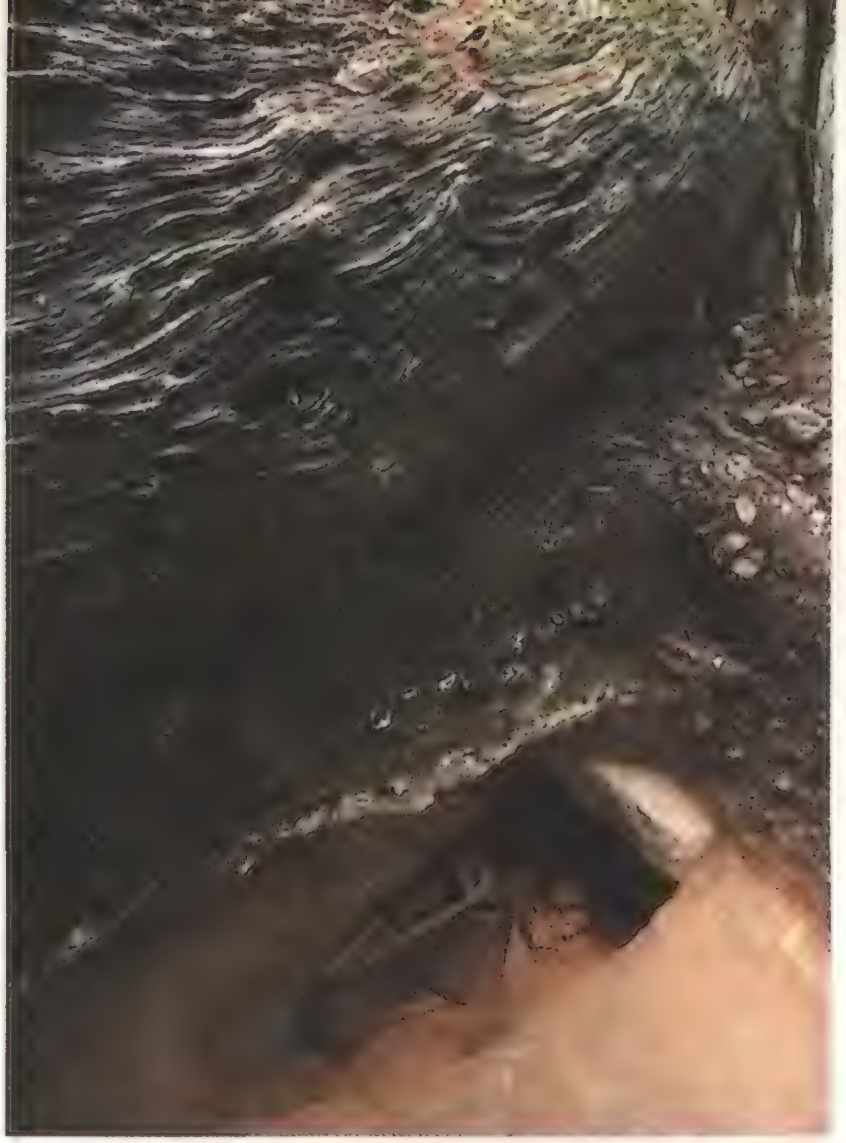
While Arlen was falling for fossils, Diane Zaino's physician father was taking his family on tours of archaeological sites throughout the American Southwest. She, too, chose Penn "because of its strong focus on archaeology." They met in 1971 on their first day as freshmen.

"I invited her up to see my books," Arlen remembers. "Which were pretty pitiful at the time," Diane adds. Later, with doctorates in hand and partial sponsorship by the National Science Foundation, they spent seven years at Santa Rita Corozal, a Post Classic Maya site in Belize.

Lying on the Caribbean with the Yucatán to the north and Guatemala to the west, Belize was known as British Honduras until 1973; it gained independence eight years ago. Except for its highlands, the country is more Caribbean in flavor than Spanish or British. Aldous Huxley once wrote that if the Earth had ends, British Honduras would be one of them; and indeed the country is best known to the anglers and scuba divers who visit its magnificent barrier reef—second only to Australia's in size—and to those who go there in search of the Maya.

Between A.D. 250 and 900, during what is known as their Classic era, the Maya established great ceremonial centers from Mexico to El Salvador. These resembled city-states ruled by semidivine royalty. There were lofty pyramidal temples and stelae intricately carved

Workmen (at left) are removing rubble from the sacred precinct; site extends far beyond the first ridge.



This crypt, 2.5 kilometers from epicenter, entombed two adults, indicating they were not among the elite.

with representations of humans and animals; ball courts and broad plazas; tombs furnished with exquisite jewelry and elaborate ceramics. The Maya devised the most complex system of writing developed in the Americas; a form of astronomy; a calendar; a mathematical system that included the concept of zero; and an extensive court etiquette. And then came collapse of the political system along with abandonment of the major Classic cities.

Why? The question was not uppermost in the Chases' minds when they selected Caracol as their next project. "At Santa Rita we checked Spanish historical documentation of the Maya against the Maya's own archaeological record, as revealed by site excavation. We found the two didn't match. So we wanted an earlier site for comparison, one that might have a Maya written record, as found on stelae and monuments, to check against the archaeological record. We thought Caracol might fill the bill," Arlen explained. An initial survey in 1983-84 convinced them that "three or four years could give us a full understanding of what the site was all about." They have had to revise that estimate.

No one knows what the Maya called Caracol, but the word means "snail" in Spanish—the city so named, perhaps, because it lies at the end of a deeply rutted, corkscrew logging road through dense jungle, near the western boundary of Belize and 86 kilometers from the nearest town. Its myriad broad plazas, temples, acropoli, causeways and residential compounds have been overrun by lush stands of ceiba, allspice and cohune. Eroded though it is, the pyramidal Canaa, which means "sky place" in Mayan, at 42.5 meters is still the tallest man-made structure in the country. Standing at its summit, Arlen Chase made a sweeping gesture. "That's Caracol—as far as the eye can see." Following his gaze over the enveloping greenery, punctuated here and there by slashes of exposed limestone ruins that are being cleared, one found it difficult to avoid an adjective that is anathema to the couple: mysterious.

"We get so tired of hearing about the 'mysterious Maya,' " Diane explained while carefully peeling layers of plaster from floors in an excavation on Canaa's upper plaza. A veil of lime dust hung in the thick, damp air and coated her auburn hair. "The Maya are no more mysterious than other past civilizations," Arlen added.

The first Westerners to invade the Maya world were Spanish conquistadores, shipwrecked off the Yucatán coast in A.D. 1511. But not until the 19th century, through the writings of John Lloyd Stephens, an American lawyer and amateur archaeologist, did Maya ruins catch the American imagination. Most spectacular was

The author, a free-lance writer from Arizona, is in Ann Arbor as a Michigan Journalism Fellow, 1989-90.

The Maya site of Caracol

Here Clarissa Hunter is detailing the skull of one of the two bodies found in this Late Classic Maya grave.

Guatemala's Tikal, discovered in 1848. Archaeologist William Coe has called it the "supreme Maya center." Excavations at this magnificent site, 76 kilometers northwest of Caracol, have told us most of what we know of the southern lowland Maya.

Archaeologists found that Tikal dominated many neighboring sites throughout the Classic era, with the exception of an enigmatic period between A.D. 534 and 690. Known as the hiatus, it brought forth no carved monuments at Tikal, where tombs are strangely impoverished. Some archaeologists have theorized that the collapse of Teotihuacán, the largest and most important pre-Columbian site in the valley of Mexico, could have been indirectly responsible. In the late 1950s a great Mayanist, Tatiana Proskouriakoff, asked what "momentous historical event" could have disrupted Tikal and the rest of the Maya world.

Caracol was discovered in 1938 when a woodcutter, Rosa Mai, stumbled onto its jungle-clad mounds while prospecting for mahogany and chicle. The logging trucks came; and in 1950 so did A. H. Anderson, the first archaeological commissioner of British Honduras, along with Linton Satterthwaite, a University of Pennsylvania archaeologist. A year later, and again in 1953, Satterthwaite returned to map the central area and to collect a number of stelae and altars for the University Museum. Sadly, the results of Anderson's later work, in '55 and '58, were lost when Hurricane Hattie destroyed his notes. Then Canadian archaeologist Paul Healy studied the ancient farming terraces in the late '70s. Other than that, Caracol was mainly left to looters and to British and Belizean soldiers patrolling the nearby Guatemalan border. "It was considered a small site," Diane explained. "It didn't get much attention."

A crowd poured out of the jungle

The Chases' first full season, in 1985, was spent clearing brush, establishing camp in a central plaza and doing limited excavation. Early in their second season, discovery of the ball court altar sent Diane racing back to camp for epigrapher Steve Houston, while Arlen gently brushed dirt from the crevices. Word crackled out to the field by walkie-talkie, and a crowd soon emerged from the jungle.

"We were all pretty excited. It was the first hieroglyphic monument found by our project," Diane recalled. "But none of us had any idea how important it would prove to be."

A few days later, the glyphs on the altar were to give the Chases their first inkling of Caracol's major role in the Classic Maya world. "It was beyond anything we had ever dreamt of—some things you don't even dare dream of finding, they're so far from likely," Diane recalled. "But people do say we have a gold thumb."

June Morton, the 1989 laboratory director, turns sherds on drying screens; behind her are solar collectors.

Bill and Diane Wilson use subsurface interface radar to find voids that might show promising areas to dig.

Data on Late Classic water jar, only partially exposed, are recorded by graduate student Katherine Stine.

Diane and camp mascot, Yax Balam, an orphaned margay, supervise Arlen's restoration of one of 300 pots found during 1989 season.

Terminal Classic incense burner is fashioned to represent sun at night.

The 160 partially eroded glyphs explained Proskouriakoff's "momentous event." The altar had been inscribed in A.D. 633 for Caracol's Lord Kan II, two years after he had won a war against an important neighbor, Naranjo. Its narrative begins with his birth in 588. As interpreted by Houston, an epigrapher from Vanderbilt University, the account then reverts to the accession of Kan II's father, Lord Water, in 553. An "axe event" glyph representing a skirmish with Tikal in 556 is followed by a "shell-star" glyph standing for war. Led by Lord Water, Caracol defeated mighty Tikal in 562.

"Caracol dominated Tikal and Naranjo for about 140 years, the time of the Middle Classic hiatus," said Arlen. "During those years it replaced Tikal as the major regional power."

David Freidel, a Maya scholar and professor of anthropology at Southern Methodist University, believes "What the Chases have found at Caracol is a very important discovery, a major piece of the Maya picture." According to Linda Schele of the University of Texas, cocurator of the stunning 1986 Maya exhibition "The Blood of Kings" (SMITHSONIAN, May 1986), "The big story, other than that it's a fabulous place, is that it documents the hiatus. That is one of the great stories in Maya archaeology, the fellow who was then the little guy knocking over the big guy."

It is fitting that such an important document would have been set in the middle of a ball court. The ball game was closely related to Maya war and religion, politics and dynastic change, and the underworld. It was played by two teams using a rubber ball. Players vied to score by driving a ball through a ring or hitting a marker; they used no hands, instead striking the ball with their shoulder, knee, torso or thigh. There was, however, a gladiatorial aspect to the game. Rubber balls were sometimes replaced by skulls or the heads of decapitated prisoners.

The myth of the Maya as a peaceful people whose games were tame persisted until about 20 years ago, despite bountiful evidence to the contrary on lintels, stelae, altars and ceramics. "We wanted to make them our pet utopia," Arlen believes.

In the Middle Classic, the Maya did not fight European-style wars with huge armies determined to annihilate one another. The Chases think the sixth-century war between Caracol and Tikal consisted of the knocking over of stelae and the hacking off of faces of rulers depicted on monuments. "This besmirched the greatness of Tikal's leaders and stripped them of their infallibility," Arlen added. "It was more destructive of the religious than of the physical order. In the Middle Classic you killed a few prisoners and put the rest into forced labor to till your fields and put up your buildings."

Noble captives like unlucky Lord Double Bird, the Tikal ruler whose defeat by Caracol was followed by the hiatus, were taken in hand-to-hand combat. It was imperative that a royal captive be led back to the captor's city alive and displayed in a demeaning public ceremony, perhaps beneath the feet of the conqueror. Afterward, if not slated for the ball game, he might be sacrificed ritually in a bloodletting ceremony. This kind of warfare, although catastrophic for the defeated

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nobles, spared the lives of most people and preserved the cities and their culture.

Theories abound on why millions of Maya fled their cities between A.D. 790 and 1200. A vast gap between elite and commoner leading to a revolt? A plague? Invaders? New trade routes? Agricultural practices that stripped nutrients from the soil and caused the collapse of the economy?

Based on what they've documented at Caracol and have seen at other sites, Arlen and Diane believe the exodus was directly related to changes in Maya warfare in the Late Classic. For the past two seasons, a grant from the Harry Frank Guggenheim Foundation has allowed them to test their theory. "Our ideas weren't really firmed up until we got to Caracol," Diane admits.

The Chases reminisced. He: "We found the missing element." She: "Caracol got us asking the right questions and getting the pertinent pieces of information. When it started to work we were really pleased." He: "And boy, did it work! Our idea was to test the impact of warfare, not on the elite, but on those living outside the epicenter. Classic era warfare had been for tribute, and we knew there had been a tremendous building boom in the center of Caracol, where the ruler lived after the defeats of Tikal and Naranjo. But did that prosperity carry through to the rest of the population?"

They picked an outlying area, excavated a quarter of it—settlements, agricultural areas and causeways—and found the same growth and prosperity, even monuments. "We found it was true of the entire population," Arlen added.

Then, inexplicably, Caracol suffered a century of decline; possibly Tikal's warriors swept in to settle old scores. But Caracol rebounded in A.D. 800. He: "The Maya had traditionally fought with spears. But now the atlatl became the weapon of choice." She: "A long-distance weapon with multiple shafts, a cross between the catapult and the bow and arrow, it gave greater propulsion and could be fired repeatedly. The emphasis was on killing."

With the help of the atlatl, Caracol conquered three different sites. They were going for territory and empire. In 562 that objective had not existed. He: "Suddenly, you see something new, the *tzompantli* at Chichén Itzá. Racks with many skulls—ceremonial displays of heads of captives taken in war, then sacrificed in religious ceremonies. Now you're beheading not only the rulers, but also the people who, as captives, had been your laborers. You are head-hunting."

These changes are reflected at the end of the Classic in carving and pottery at Caracol. "Earlier, decorated pottery had been polychrome. In the Terminal Classic, preceding the collapse, scenes associated with warfare, such as captives being presented to a ruler, were carved and modeled on the damp clay; they were not painted. Both altars found in our last season are from this period and show captives," explained Arlen. One, beautifully preserved, tells of the defeat by Caracol of three lords from three different sites; two of them are depicted on the monument.

Murals of this period at Chichén Itzá show houses being sacked, their thatched roofs in flames. Rebuilding was next to impossible for large populations living at the ecological limits of the environment. "The Maya

Some of the thousand ceramic vessels recovered at Caracol since the project began in 1985 are stored on shelves in the main lab.

Classic cylinder with woman's figure is from the outskirts; here, a detail.

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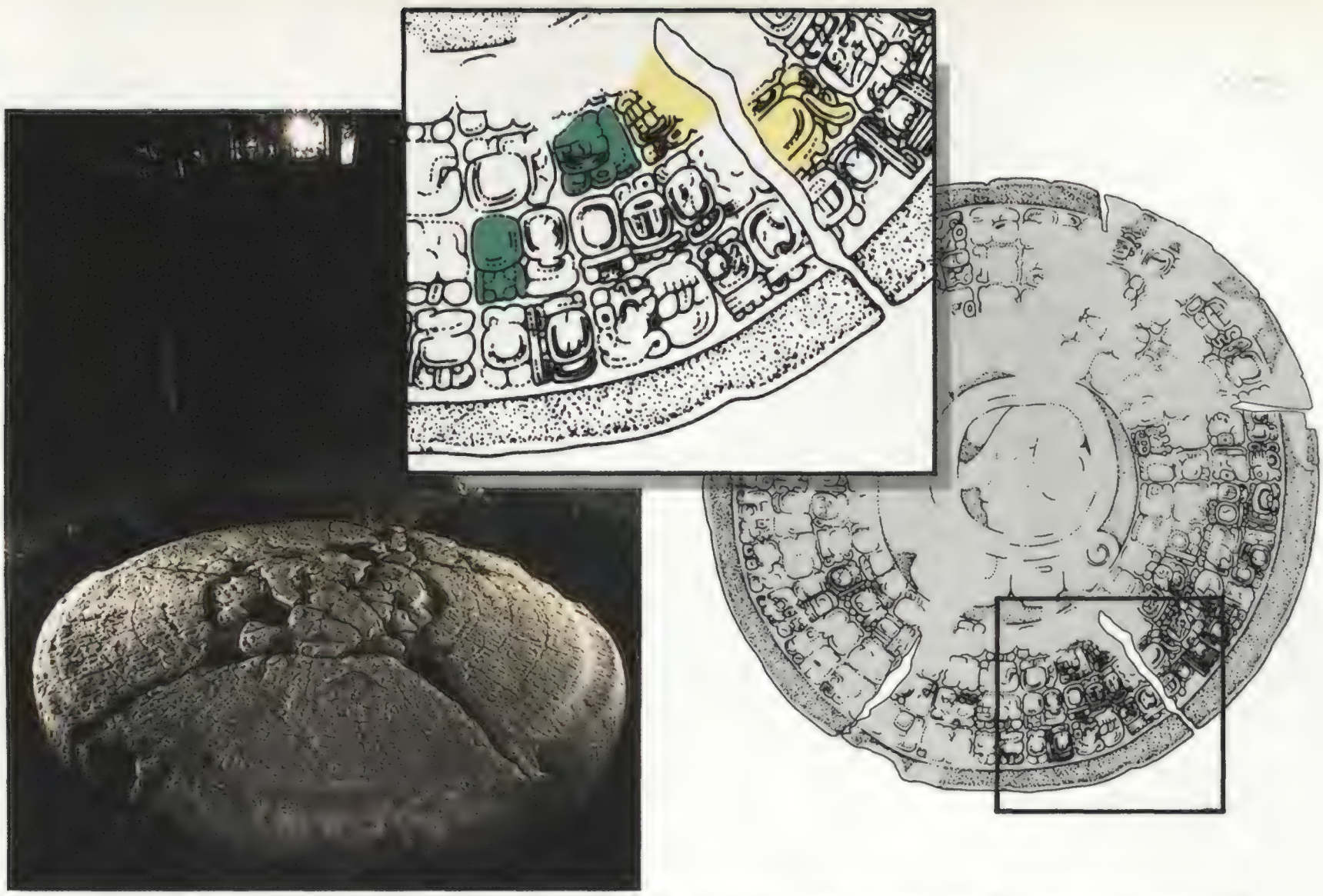

Hieroglyphs on altar from Caracol ball court run clockwise. Account of Tikal's defeat is interrupted by fracture and erosion. Yellow tint in detail of the drawing represents a skirmish; green, the battle.

didn't just disappear," Diane believes. "They left the cities for places where they could find readily available building materials—and water. They were frightened. The people on those northern skull racks may have come from the south. They had been under the protection of deified ancestors, and their survivors saw that the ancestors had not helped them. Their religion was not working. They stopped building tall temples. To the Maya, religion and politics were inseparable. Their faith in the system was shattered. It's not like thinking 'Well, we'll get rid of Mayor Koch and bring in someone who'll fix things up.' "

During the 1989 season the archaeological team at Caracol consisted of 104 people; 15, in addition to the Chases, were permanent staff, graduate and undergraduate students. Other specialists in residence from time to time included Nicoli Grube, whose field is Maya hieroglyphics. Next season laser technology will be used for reading eroded hieroglyphics in long-abandoned tombs. The labor force is Belizean: four cooks and a laundress; a foreman in charge of all workmen; and a secondary foreman, with expertise in stabilization, to supervise the consolidation crew putting things back together after excavation. Most members of the work force have Maya ancestry; some are veterans of the dig at Santa Rita.

A day in the field begins at 6:30 A.M. when everyone tumbles out of hammocks festooned with mosquito netting and heads for a hot breakfast. By 7, Diane and Arlen have sent off scientists, students and laborers to assigned sites. Machetes are standard equipment, protection against snakes, wild boars and an occasional jaguar. "Every evening we plan the next day: who goes where, what excavating, photographing, mapping and drawing need to be done," Arlen explained. "With our University of Pennsylvania training behind us, we decided we must have a full overview, at all times, of what every excavation or deposit yielded. Besides the site center, we usually have at least five teams excavating within a radius of three kilometers farther out." All sites have been given capricious names—Machete, Conchita, Pajaro. "One site is so far in the boonies we call it Nowhere."

Anyone with a question or a need can reach the Chases by walkie-talkie. A pair in perpetual motion, they spend a lot of time walking out to various sites, checking to be sure the excavating or recording is being done correctly. Their responsibilities also include keeping tabs on all manner of supplies and equipment (drinking water, food, bags of lime and cement), making sure the road into the site is kept passable and taking in meetings in Belize City or Belmopan. "This year

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we had radio contact with the U.S. Embassy in Belize City. A mixed blessing," Arlen commented wryly.

A good share of each day is spent in the lab. Although there is a full-time lab director, Arlen pursues his area of expertise—ceramic analysis and reconstruction; and Diane, hers—the analysis of human bone. At 4 o'clock the crew begins straggling in, each excavator bringing new materials to be processed and reporting on the day's finds. Then come bucket baths, courtesy of the 2,000-year-old Maya rainwater reservoir, water from which is used for everything except drinking and cooking. After dinner, it's work, reading, games—or movies on the VCR, which, along with the labs, computers and electric lights, is powered by solar-operated batteries that were donated by the Florida Solar Energy Center.

In the field from January to June and at home in Orlando the rest of the year (where they teach during the fall term), the Chases live Caracol. "We probably spend more time talking Maya archaeology than your average couple," deadpanned Diane. "But we don't always agree," cautioned Arlen. "We come to better decisions because each of us has had to defend ideas to the other," she went on. "Plus, you really need two people to run a dig of this size." He interjected, "It just so happens that we're married," and she shot back, "Yes, we have been told that we finish each other's sentences." They don't; each allows the other to finish, but listening to them is the aural equivalent of watching a staccato game of badminton.

There was another major discovery in the 1986 season, centered around a royal tomb near the top of Canaa. It was in a location fit for a ruler, and it contained the body of a woman. Maya archaeologists have found few women in major tombs, especially of the Classic period. "The bones were terribly deteriorated," recalled Diane. "The precise evidence was the pelvis, the single best bone for sex identification. It was no guess; that bone was excellently preserved. It was beautiful." Arlen described the scene: "She was buried with jade beads, solid jade ear flares, teeth inlaid with jade, and tomb furnishings customary for royalty or the elite. There were eight ceramic vessels and some kind of animal claw. A painted capstone. Her death date had

Tzompantli platform at Chichén Itzá shows four tiers of relief-carved skulls from the Terminal Classic. Maya warfare in this period emphasized taking and sacrificing captives rather than enslaving them.

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Figure with headdress and ear flares characteristic of a Maya lord holds ceremonial bar, a sign of rulership.

been painted on the back wall, and broad stripes of red swept around the tomb walls and climbed the south corners, framing the entrance."

The woman had been buried in 634, shortly after the ball court monument was erected, so she must have witnessed the heroic events of the preceding years. She might have been Kan II's mother or wife. Or she might have been a ruler. "We think women might have ruled Caracol at certain times," Diane posited. "Perhaps as regents when the heir apparent was a child."

A burial in 695 might also have been a woman. "The bones were too highly eroded to be sexed," Diane said. "But the burial pattern in the tomb was so similar it made us wonder." Arlen took up: "Both were in north buildings, were located in a medial doorway under the floor and had eight vessels. The burials were placed in the same way." Associated hieroglyphic text made clear that this person was a member of the royal family. And inclusion of bobwhites in elite tombs at Caracol and Tikal seems to have conferred status; this one contained 13, a number sacred to the Maya.

Representations of women are common in Maya ceramics, murals and carvings; but for a generation, from the 1930s into the '50s, Mayanists interpreted these portrayals as male priests in flowing robes. "They couldn't conceive of women having played any important role," according to Joyce Marcus, professor of anthropology at the University of Michigan, whose specialty is the women of the Maya. "Women probably ruled for brief periods in Palenque, Calakmul and Coba, as well as Caracol. The key element is royalty. Elizabeth became queen because her father had no male heir. Well, as it happens to turn out, it was the same with the Maya." Evidence from the historical records of the Classic period, such as that found on hieroglyphic texts of stelae and altars, is still needed, however.

Another surprise has been the size of Caracol. In tracing seven tentaclelike causeways and mapping the site, the Chases discovered that by the end of the hiatus, Caracol was more densely populated than Tikal. Some Maya scholars may consider that heresy. But in Tikal's 16-square-kilometer center, 2,300 structures have been mapped. The Chases have mapped more than 1,500 in 4 square kilometers at Caracol and estimate there are at least 4,400 in all in the central core. In four years they have located 54 tombs, twice as many as were found in decades of excavation at Tikal. "The old archaeological definition of 'tomb' was 'elite interment,' " Arlen explained. "But we found that a larger portion of society had access to tombs; so far, that is distinctive of Caracol. Whereas there is one individual in a royal tomb, those of lower status contain 2 to 26."

"Most people don't want to believe Caracol is as big or bigger than Tikal," Diane said. "Well, it's time for them to hear that Tikal is not the 'supreme' Maya city. It is a very important site, as is Caracol."

How long will they work at Caracol? "We will stay until we have no more questions to ask," according to Diane. "Now we can ask questions and get answers. The Maya of Caracol were kind enough to leave us dates in their tombs, so we can tie things down to 20-year intervals and record the changes. At most sites you're lucky if you can get within 100 years." "By 1992, for example, we will have a much fuller picture of the social organization," Arlen said. "Wherever we work we always have a need to carry out more long-term projects. Each season at a site changes our view of it. In order to understand more, we have to be in an area for a long, long time. And funding is a problem. You can't get more than two years' from most backers." Their next two seasons will be funded by the Government of Belize and the U.S. Agency for International Development.

The Chases, as well as the Belizean government, envision Caracol as an eventual archaeological park. "But it will take years to get to the point where visitors can get a sense of what it once was," Diane cautions. "It should look like a city that has been abandoned for more than a thousand years." Arlen adds: "Not Disneyland."

"Caracol is very important to Belize," says that country's archaeological commissioner, Harriot Topsey. He has plans for a tourist attraction comparable to the

Maya faces, modeled in stucco, were architectural ornamentation on buildings at the summit of Canaa.

much-visited Tikal and Chichén Itzá. Topsey envisions a 166-square-kilometer national park that will encompass the surrounding rain forest, some of the finest remaining in Central America. The region is home to the keel-billed motmot, the red-bellied trogon and the margay, the smallest jungle cat in the Maya area.

Most evenings during the season at Caracol, Belizean workers come in from the field and, before dinner, lace up their tennis shoes for a raging game of soccer, the nation's most popular sport. Belize's leagues have yet to play Guatemala which, in a still-simmering dispute, claims Belize as its rightful eastern territory. And so Caracol, with its ball court altar, has a special significance for Belizeans. "Archaeology means a lot more than history around here," explains Topsey. "You have to understand that Caracol's victory over Tikal in 562 gives us a big morale boost. We like to hear that we beat Guatemala, even if it was 1,400 years ago."

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By Rick Mashburn

A modern armor maker dresses men in knights' clothing

Master armorer Luther Sowers, using new materials and old techniques, has resurrected a craft that all but died in the 17th century

"I've got to get this right the first time," Luther Sowers says, pulling a safety visor over his face before lighting his oxyacetylene torch.

Sowers has reached a critical moment in the most challenging project of his career as an armor maker. He has spent more than a hundred hours working a flat sheet of steel into an inverted bowl, a roughly shaped helmet. He is ready to hammer a ridge along the top, beginning a crest that will stand 1.5 inches high. The next few blows will permanently set the curve. A miscalculation would be disastrous.

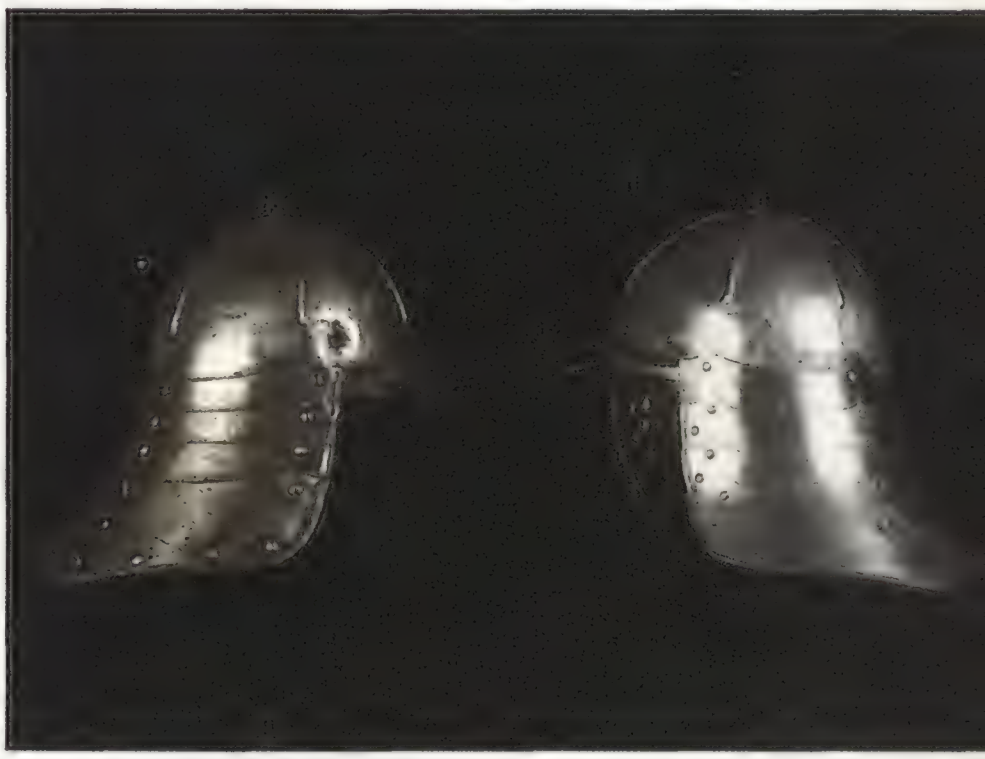
I am watching a master craftsman at work. Sowers is the man to see if you're in the market for a new set of armor or a replica of George Washington's sword. He specializes in European-made armor worn in Colonial America and makes accurate reproductions of the armor and of edged weapons. Sowers is one of just a few professional armor makers in the world and is considered the best in this country.

Now he is in the process of making a copy of the earliest complete close helmet found in the New World. The original helmet, called "close" because it completely covers the head and face, was made about 1580. It was presumably worn between 1619 and 1622 by a resident of Martin's Hundred, a private plantation ten miles from Jamestown, Virginia. The plantation was destroyed by Indians in 1622. The helmet was found there in a site now known as Carter's Grove Plantation, where excavation was done by archaeologists from Colonial Williamsburg between 1976 and 1982.

The helmet lay buried in a silt-filled well for 350 years before being unearthed along with a somewhat later helmet. The two came out of the mud as masses of rust. Sowers is creating a copy of the earlier helmet that, when finished, will be displayed at Colonial Williamsburg's Winthrop Rockefeller Archaeological Museum for Martin's Hundred when it opens next fall.

I am uneasy as Sowers lights the torch and a foot-long plume of yellow fire shoots out with a roar. He adjusts it, and the flame shortens and turns pale blue. With a vise grip in his gloved left hand, he holds the helmet over a steel stake. With the torch in his right hand, he heats an area about two inches square. When the heated area turns a dull red, Sowers trades the torch for a lightweight hammer with a square head. He begins to tap the helmet, and a piercing, bell-like tone rings out. After only a few strikes, he stops. He puts down the hammer and turns to me. "Let me know if you hear the phone ring," he says. Then he goes back to work.

Hearing the phone in his noisy workshop is only one of the challenges Sowers faces as an armor maker in the 20th century. He has resurrected a craft that was dying when this country was first settled by the Spanish, French and English. He has figured out the techniques of 16th-century artisans, who were fiercely secretive. Working alone, he reproduces objects that



Luther Sowers stands with his gleaming re-creation of a 16th-century, lightweight, German-style half-armor.

At right is Sowers' copy of original "lobster-tail" helmet, named for movable parts of back-of-the-neck defense.

Photographs by Arthur A. Murphy

Master armor maker resurrects his craft

After figuring measurements on paper, Sowers makes changes on Martin's Hundred helmet reproduction.

required the talents of dozens of skilled craftsmen. And perhaps most astonishing, he is using all this energy to create a product that is not particularly in demand these days.

Located on a 125-acre farm near Salisbury, North Carolina, Sowers' workshop is equipped with a telephone, an oxyacetylene torch and an electric drill. Despite such conveniences, he believes he has much in common with artisans of 300 to 400 years ago.

"The problems I face are the same problems armor makers had then: the basic difficulties of moving metal with a hammer," he says. "The biggest difference is that I have no master armor maker to tell me what to do next. I don't even have books to study."

Sowers has learned to make armor by looking at it, feeling it and wearing it. He has earned a widespread reputation among museum professionals. "We use him when we want museum-quality reproductions," says William Brown III, a staff curator with the division of the National Park Service that places reproduction artifacts at some 200 historic sites. "A lot of people throw the word 'craftsman' around, but Luther is unique in his field."

When Ivor Noël Hume, then Williamsburg's chief archaeologist, was looking for someone to reproduce the Martin's Hundred helmets, Sowers' name was frequently mentioned. Yet before he offered Sowers the project, Hume compared his craftsmanship with that of several armor makers in England. "The quality of their work was just not as good," he reports.

Sowers' success as an armorer can be credited to two lifelong passions—military history and art. The first gave him the knowledge to make armor accurately; the second gave him the skills to make it well.

Whacking his "foes" with a cornstalk

A trim and youthful-looking 49-year-old, despite the strands of gray in his dark brown hair, Sowers has striking pale green eyes and speaks with a genteel sort of Southern accent. Ask him any question and you'll get a story; ask him how he got started making armor and you'll have to sit still for awhile.

He grew up on the same farm where he now lives and has his workshop. As a child, Sowers was fascinated with early 1950s movies that featured Roman gladiators, medieval knights and Napoleon's colorfully uniformed soldiers. "I was often out in the fields whacking some imaginary foe with a cornstalk," he says. "Or I was inside, making soldiers out of clay."

He made his first metal-plate armor to wear to his high school Latin club banquet. "My friends and I were determined not to dress up in bed sheets, so I made Roman breastplates and backplates out of sheet tin. My father used to say that the roof of the barn

Sowers puts finishing touches on a full set of armor for his collection. His Martin's Hundred reproduction helmet is at left.

Armorer uses a welding torch to heat breastplate resting on steel mandril.

leaked because I was always pulling it off in pieces to make armor. The truth is, he used my armor to patch a hole in the roof. It's still up there."

In 1961, when Sowers was studying sculpture at the Tyler School of Fine Arts in Philadelphia, he became involved in reenactments of Civil War battles that were being staged to commemorate the war's centennial. But, he recalls, "I became disgruntled about the lack of research—particularly the inaccuracy of the uniforms and clothes. A few friends and I formed our own group and sewed our own uniforms out of old blankets. One fellow even made our shoes."

Sowers and his friends were so enthusiastic that his group merged with others to form the First Maryland Regiment, well known for its authentic reenactments of Revolutionary War battles; in fact, his first performance took place at the Smithsonian. After college, Sowers taught art in a public high school, spent his summers making sculpture, and traveled on weekends with the First Maryland Regiment. In the late '60s, he bought an anvil and a torch for a metal-sculpture project and decided to try to make his first reproduction helmet. He caused a minor sensation when he showed up wearing a Pilgrim horseman's helmet at one of the regiment events. Sowers then received a commission to make a similar helmet for the living history program at Jamestown Historic Site. His new business, Anvil Arms, was created.

Now, even after years of experience and widespread acclaim, Sowers cannot afford to work full-time as an armor maker. So he also restores armor, makes swords and reproduces historic military uniforms. It isn't that people aren't interested in dressing up like Spanish conquistadores or British pikemen; few are willing to pay $900 for an unadorned, hand-hammered helmet or $6,000 for a plain half-suit of armor.

Much of Sowers' armor is worn for living history presentations at historic sites across the country, where costumed actors play the roles of explorers and settlers, and the accuracy of dress is essential. "These places can't use the original artifacts," Sowers explains, "because they are too valuable."

Many people see Sowers' work and express surprise that armor was worn in Colonial America. Plate armor is commonly, and appropriately, associated with Europe in the Middle Ages—with knights and jousting tournaments. Although some form of metal armor dates back to the ancient Egyptians and Sumerians, the development and the construction of steel-plate armor reached its zenith with the Italian and German craftsmen of the 15th and 16th centuries. The Europeans' exploration of the New World occurred during the waning years of the golden age of armor, but armor continued to be standard dress for the military.

Rick Mashburn is a free-lance writer who lives in Winston-Salem, North Carolina, and is also a contributing editor of Historic Preservation *magazine.*

When Sir Walter Raleigh settled New World colonies, officers wore Spanish-style armor that incorporated a conical cabasset (helmet) and a gorget (neck defense). The lining on gorget kept armor plates from making noise. In combat, dagger was held in left hand, sword in right.

The Spanish, who explored the New World in the first half of the 16th century, were the most heavily armored European visitors. Some cavalrymen on the expeditions led by De Soto and Coronado were most likely armored in steel, quilted cotton, leather, or some combination thereof, from head to toe. Even their horses wore armor. Because of the difficulty of carrying the bulky plates while traveling, the Spanish wore their armor continuously despite the discomfort. Eleven of De Soto's armor-clad soldiers drowned when their canoe was overturned by Indians.

The English wore armor as protection against both the Indians and the Spanish when attempting to settle Roanoke Island in the 1580s and later, in 1607, when establishing the Jamestown Colony. When John Smith returned to England from Jamestown in 1609, he reported that the colony had more helmets and cuirasses (breastplates and backplates) than men. But after a devastating attack by Indians in 1622, Jamestown's Virginia Company asked for more armor from England and received 2,000 helmets, 400 shirts and coats of mail, 40 cuirasses and 100 brigandines.

The brigandine, a jacket reinforced with small metal plates, had not been used in England for a century when the shipment was sent to Jamestown. Armor was worn for a longer period in the New World than in Europe because it provided adequate defense against the primitive weapons of the Indians; in Europe, more sophisticated firearms were making armor increasingly ineffective. Armor was used in the Colonies until the middle of the 17th century.

Sowers has made samples of many of the types of armor used. For the De Soto National Memorial in Bradenton, Florida, he constructed a complete suit of Spanish-style armor dating to the early 1500s. The suit includes defenses for the arms and legs, and a shirt of chain mail made of 18,743 interconnected rings (it took a month to assemble).

Sowers' re-creation of a typical Elizabethan-style half-suit of armor, with 52 individual plates, is worn by actors at the Fort Raleigh National Historic Site on Roanoke Island in North Carolina. The breastplate is pistolproof and is one-eighth inch thick. Below it hang tassets and two sets of overlapping plates to protect the upper thighs. Sowers made a more carefully finished, delicately etched officer's gorget, or neck defense, for the costumed interpreter on the *Elizabeth II*, a reconstruction of one of the Roanoke-voyage ships at a site in Manteo, North Carolina.

Most of the armor worn in America did not have the elaborate decoration one finds on the armor in the world's major museum collections. The armor that was worn was often old and in poor condition. "For the early English settlers in the New World, there was no such thing as an issue uniform of armor. Each man was responsible for his own gear," Sowers explains. "The common Spanish foot soldier often wore bits and pieces of armor, rather than the full suit worn by the leaders." Armor was one of the spoils of war and was collected from dead or captured soldiers after battle; it was refurbished and reused. The oldest close helmet found at the Martin's Hundred site had been reworked before being taken to Virginia; a rather clumsy visor and chin defense had been added to the excellently crafted bowl of the helmet.

Although examples of armor dating back to the

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Quilted lining of 17th-century horseman's "lobster-tail" helmet covered head, kept hair out of moving parts.

Arming doublet (padded garment) and armor plates for neck, arm defenses, will be covered by breastplate.

Colonial period are rare, enough pieces have been found, and enough written and pictorial documentation has survived to offer a few examples of what was worn at that time. Occasionally Sowers has been able to have a look inside the armor in major collections—where the armor has been preserved and telltale hammer marks have not been ground and polished away—to collect some clues about its fabrication. He has also examined firsthand the sliding rivets and other ingenious mechanisms that hold the plates together, yet allow the wearer to move about.

From old paintings, clues to techniques

Sowers has uncovered additional clues regarding early armorers' techniques by studying old paintings and prints. For example, an early 16th-century woodcut depicting the workshop of Conrad Seusenhofer, the armorer of Emperor Maximilian I, shows an apparently accurate array of tools. Sowers has noticed that some pictures show helmets and large plates being held with tongs while they are hammered, while smaller pieces are simply being held in the hand; the tongs, he surmises, indicate forging with heat. "Most armor was worked cold, since that compresses the metal and makes it stronger," he explains. "The amount of metal on the larger and heavier pieces makes heating it necessary."

Unlike the early armorers, whose numbers included specialists who performed a single task again and again, Sowers does it all. He hammers out every shape, turns the edges and adds the fluting that strengthens the plates. He can incise, engrave and etch decorative borders. He spends hours polishing steel to a high luster. He makes the several kinds of rivets, leather straps and buckles that connect the plates. He rivets leather strips to the insides of helmets, to which he sews the fabric linings. He sews sturdy linen coats and leather buff coats to be worn under body armor.

Sowers credits his own abundance of skills to his art school training. "Armor is sculpture. That's what fascinates me about it. I love the color of the metal, the play of light and shadow across the rough surface as the metal is being hammered."

He begins each project by making a paper pattern showing the three-dimensional object as it would look if flattened. The pattern is traced onto a piece of steel, then cut out with hand shears or chisels, tools that go back many centuries. Then he hammers, using his eyes as his primary guide.

Sowers makes use of modern technology whenever he can if it does not harm the appearance of the finished product. "I don't have a shop with 15 or 20 apprentices, like the master armor makers in the 1500s," he says. "But when you are copying their tech-

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Youngster gets help trying on an open-faced burgonet helmet at the Fort Raleigh National Historic Site.

niques, modern technology usually doesn't fit in. I can spot the use of machines right away. The armor has a hard, geometric look. Using the old methods gives it a handmade, softer look."

He uses an electric drill to make the holes for rivets, since those holes do not show, but he rarely uses an electric sander. "The contours on the original shapes don't lend themselves to a power sanding wheel, so I use a lot of elbow grease and emery paper to give the hand-finished armor a mellow, white look."

Surprisingly, Sowers is less authentic when searching for his materials. He has to use steel of varying thicknesses for the different plates of a suit of armor, and steel is not easily ordered in small quantities. So he uses automobile body parts. "The older model cars usually have heavier metal. I used the hood of a 1953 Buick for a backplate when I discovered it was exactly the same thickness as an original German backplate made in 1580. I used pieces of a fender from a '69 Firebird for parts of the Martin's Hundred helmets."

Sowers has not discovered how the early armorers managed to heat a specific spot on a piece of metal while it was being worked, but he solves that problem by using the torch. He doesn't know how finished parts were held in place while pieces were being joined; he uses tiny wing nuts to secure the plates temporarily. "I sometimes use 15 or 20 wing nuts at a time," he says. "It may have been a horrendous job to make that many by hand. Maybe they used oak pegs." Like the early armorers, he keeps some of his techniques secret: "There are a couple of things we don't talk about because of the competition."

He has learned about the craft not only by practicing it, but also by wearing his work and by talking to others who wear it. Sowers learned something about the importance of adequate padding when he walked several miles wearing 22 pounds of armor in the Lord Mayor's Show in London. The 14-pound chain mail shirt he made for the De Soto National Memorial was unbearably heavy until he put on a sword belt that distributed part of the weight from his shoulders to his waist. "It is important that we field-test the armor. When I finished the knee defenses for the De Soto project, I wore them out to the mailbox. I ended up carrying them back because they kept slipping down, so I had to make thigh defenses to support them."

In some ways, the people who wear armor regularly are the people who know it best. Phil Evans (opposite), a ranger at the Fort Raleigh National Historic Site, dresses in a half-suit of armor several times a week when he delivers history monologues to summer visitors. He is familiar with the discomfort that early Colonists would have felt wearing their armor in the hot, humid climate of the Southern coast. "It does get hot wearing a quilted coat inside a tin can," Evans says. "Even on cooler days I can wear it only about four hours before it begins to feel uncomfortable. I can move fairly well, but I can't scratch my back, and if I try to touch my toes I feel like I'm being cut in two."

Evans has learned that, contrary to what many historians have written, armor was not too clumsy and noisy to be worn effectively in the forested New World. His favorite approach to get the attention of visitors at Fort Raleigh is to sneak through the woods and challenge surprised "intruders" at the reconstructed earthen fort. "Have a care!" he shouts in simulated Elizabethan English. "Who are ye who come here upon our fortification? We do not know if ye be Spaniards or savages!"

Quite by accident, Evans discovered that exposure to salt water does not make armor corrode as quickly as one might think. As part of the celebration of the 400th anniversary of the Roanoke voyages, Evans participated in a reenactment of the landing of a group of explorers. He stepped from a boat into what he thought was shallow water but found himself nearly up to his waist in the sea. "There was nothing to do then but wade on to shore," he remembers. "I was really worried about the armor rusting."

Evans was not able to keep Sowers from learning about his swim. The reenactment was covered in a local newspaper, and Sowers saw it in a UPI photograph. Seeing his lovingly crafted armor abused in a news picture is another thing a 16th-century armor maker would never have had to deal with.

Living-history interpreter Phil Evans, in half-suit of armor made by Sowers, welcomes all to Fort Raleigh.

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THE TOWER OF BABEL AND SYSTEMS INTEGRATION

The parable is older than writing itself, coming to us from the first murmurings of civilization. Yet its lesson seems to have been aimed specifically at the late twentieth century.

In Genesis, Chapter 11, we read of an unnamed people building a great city on the plain of Shinar (Mesopotamia). To the narrator of this parable, peering across time and desert from his own nomadic traditions, these folk were awesomely clever. They all spoke one common language, and because of this, nothing was impossible to them.

The plan of these ingenious people was to erect a

Pieter Bruegel the Elder, c. 1560, Kunsthistorisches Museum, Vienna

huge temple tower, a ziggurat, whose top would reach into heaven. It was to be an altar to their own intellect and would be called Babel, or "Gate of God." But God himself came down and walked the streets of their city and saw their project under construction. The hubris of this arrogant race angered him. He passed his hand over the city and cursed it. Now where there had been one language were suddenly hundreds. Confusion reigned. Nothing was possible. The people abandoned their city and scattered across the land, taking with them their bewildering tongues. And their vaunted temple, the Tower of Babel, was left untopped; carrion for the wind.

The lesson taught by this ancient parable is uncannily prescient for us in the twentieth century. The revolution in information technology during the past four decades has brought with it the ancient curse of Babel. Every year witnesses the birth of new computer companies, all fiercely competing with faster, more powerful hardware, new formats and new languages. All contributing to an atmosphere of discord that the narrator of the Biblical story would have had no trouble recognizing, despite the great gulf of time.

Recognizing this discord, Lockheed has a solution; systems integration. For years the company has been synthesizing apparently incompatible systems, whether for use in space, the military, or private industry. To this end, Lockheed has actually been able to work against the Babel effect. And with everyone once again speaking the same language, who knows what wonders are possible?

Lockheed
Giving shape to imagination

By Stanley Meisler

Casting a *glasnost* glow on once-obscured artists

To be an independent artist in the USSR until recently was to live a secret, underground existence. Things are very different these days

In 1974, several "unofficial" artists—as the painters and sculptors who do not belong to the government-anointed Union of Artists of the USSR are called—tried to mount an outdoor show in an open field in a neighborhood on the outskirts of Moscow. It lasted only a few minutes. The authorities sent in thugs and water trucks to beat away the crowd, and then bulldozers to bury the decadent art. In the traditional government view, if an artist did not study in the appropriate art schools, did not follow government strictures on style and subject matter, and did not have the sanction of membership in the union, then, officially, he or she did not exist.

Now, under Mikhail Gorbachev and *glasnost* and *perestroika*, unofficial art is the pride of Moscow. For example, on clement weekends, scores of unofficial artists and craftsmen set up their easels and stands in Izmailovo Park (left), in the north of the capital, for thousands of strolling Muscovites eager to spend rubles on something decorative or meaningful or different for their crowded homes. Not only do the few police on duty in the park refrain from harassing the artists and customers, but they even point the way for newcomers who do not know where the show begins.

Izmailovo can be a disappointment to a foreigner

Muscovites enjoy looking at the latest artworks displayed in a weekend open-air fair at Izmailovo Park.

Pictured in his studio, avant-garde painter Vadim Zakharov used to wear an eye patch to symbolize how artists were handicapped in Soviet society. Now, though, young artists can show their work openly.

trying to understand Soviet contemporary art. The most talented unofficial painters, who have other outlets under glasnost, do not like to exhibit there. Most of the paintings at Izmailovo, if it were not for the shock of their appearing at all in the Soviet Union, would seem rather lackluster, the kind of derivative, touristy schlock—but with, of course, a Russian twist—that a visitor might find at Green Park in London or at occasional Washington Square street exhibits in New York City. For Muscovites, however, Izmailovo is an astonishing and exhilarating symbol, one of the most visible demonstrations that, under Gorbachev, the Soviet Union is entering and fostering a new era of art.

This was driven home to me on a Sunday morning in late 1987, just a few months after the weekly exhibitions began, as I watched an angry old man, a black cap snug on his silvery hair, stare at a painting at a stand and demand that the artist pull it down. "This is not art!" the elderly man shouted. The painting that had provoked him portrayed a Soviet soldier home from World War II, his face disfigured in a symbolic and unsubtle way. In place of his nose, a hand grew, reaching down to clamp his mouth shut.

The critic's cries of outrage prompted onlookers to crowd around him. But he aroused no sympathy. Instead, they laughed and jeered, thrusting their fingers at him to make their point. "Who the hell are you?" someone demanded.

The artist, a 43-year-old interior decorator named Anatolii, grinned at me and spoke a single word: "Glasnost." "That angry man," he then went on, "is one of the old kind." Short, with a cherubic face, Anatolii was one of the few artists at Izmailovo displaying such explicitly political subject matter. He told me he was not worried that the old man might try to persuade the authorities to tear down the offending painting. "Paintings like these do not stay up very long," he said. "They sell quickly. I have even sold one just like that to a cosmonaut. I have had ideas like this in my head for a long time, but I did not feel free to express them. Now I do."

In three years, the world of Soviet art has turned upside down. Unofficial artists, who once sold their paintings in the obscurity of secret basement shows to friends and foreign diplomats, now find themselves the favorites of a government eager to publicize their work

Stanley Meisler, a Washington correspondent for the Los Angeles Times, *reported on events in Gorbachev's Soviet Union in 1987 and 1988.*

and to sell it at high prices in a world market. Some of the young artists have suddenly become rich, celebrated and thoroughly confused.

The changes came in a cascade. First, the Gorbachev regime took the spiritual forefathers of contemporary Soviet art out of darkness. For the first time, both the public and the painters were allowed to look at their own early 20th-century heritage. Shortly after the Izmailovo Park weekends began in 1987, for example, Moscow's Pushkin Museum mounted a major retrospective of the long-maligned Marc Chagall on the 100th anniversary of his birth in the Belorussian town of Vitebsk. Included was some of his little-known and well-hidden work produced shortly after the Russian Revolution, when he served for a short time as Vitebsk's commissar of art (SMITHSONIAN, May 1985).

While showing the once-obscured past, the Gorbachev regime also turned to the present and suddenly decided to pay attention to its unofficial contemporary painters, a host of stubborn artists, busy but underground for many years. Although the bureaucratic structure that stifled Soviet art for a half-century remained in place, the Gorbachev bureaucrats started to blur the distinction between official and unofficial art. In a startling turnabout, the Moscow branch of the Union of Artists of the USSR—the essence of officialdom in art—even invited ten unofficial artists, in July 1988, to exhibit alongside its own members in a massive show in central Moscow. "Asking whether someone is an official or an unofficial artist now," said Pavel Khoroshilov, who runs the Export Salon of the Union of Soviet Artists, "is like asking whether Andy Warhol was a member of the Republican or Democratic Party."

A shocking step for bureaucracy

After deciding to tolerate unofficial art, the Gorbachev regime then took the shocking step of promoting it. Underground artists were suddenly encouraged to exhibit abroad. In 1988, their work was displayed at such international centers as Paris, Madrid and Basel; and in a dramatic change of policy, they even received permission to travel with their work.

In its most blatant endorsement of the capitalist art market, the government allowed Sotheby's, in July 1988, to stage an international auction in Moscow of contemporary and early 20th-century Soviet art. The 120 paintings sold for about $3.5 million.

All this attention is making Soviet art fashionable in America. American art journals, which tended to neglect Soviet art for a half-century, now brim with almost breathless essays about what is going on there. It is obvious that American art lovers, even though they have seen almost nothing of it, are fascinated by the new Gorbachev art scene.

Yurii Petruk's *Laika the Dog* depicts the animal that was shot into space in Sputnik 2 on November 3, 1957.

Andrei Roiter's Part IV: *Still-Life Fragment* is part of a polyptych based on artist's childhood memories.

In *Identity Card,* Sergei Shutov combines his signature and self-portrait—elements of a real identity card.

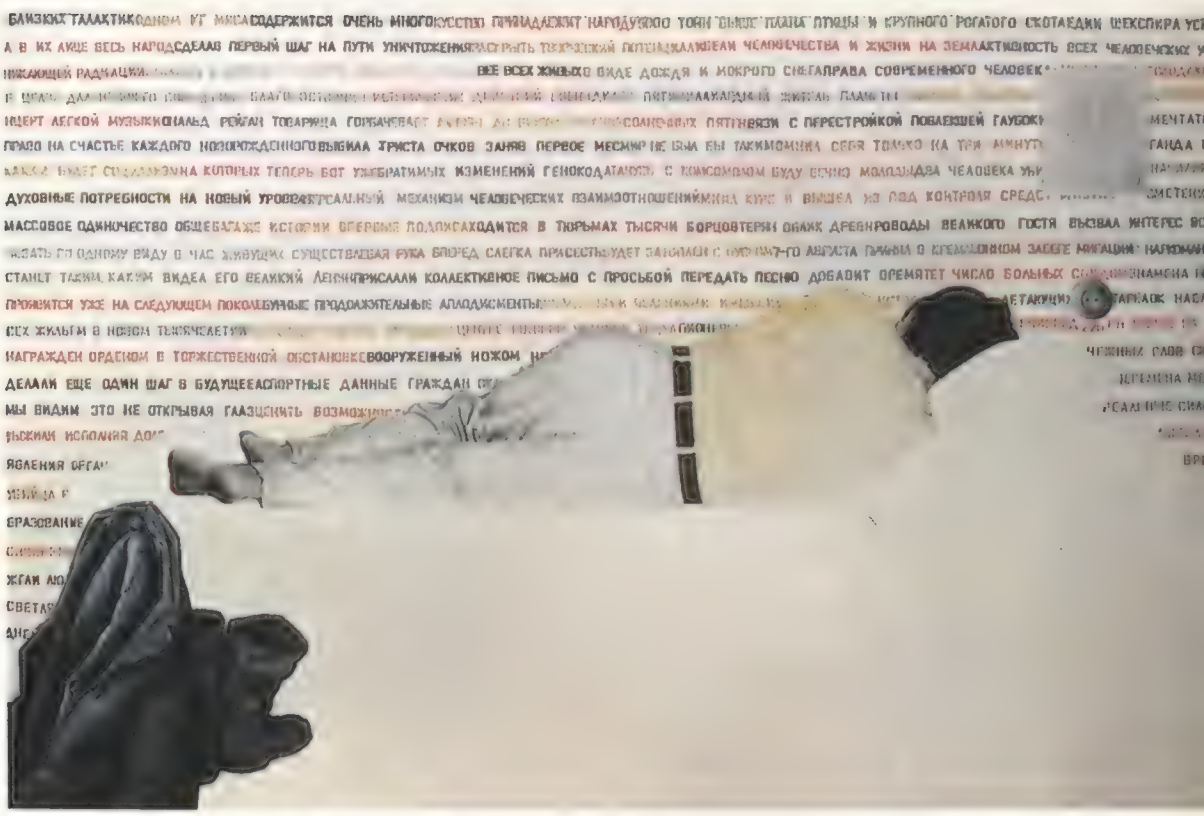
What is at the heart of all the excitement? Many Americans now have their first real chance to find out: an unprecedented exhibition of ten young Soviet and ten young American artists is making the rounds of five American museums this year and next. The show, which opened at the Modern Art Museum of Fort Worth in May, moved to the San Francisco Museum of Modern Art in September. It is now on view at the Albright-Knox Art Gallery in Buffalo, through January 7, 1990, and opens at the Milwaukee Art Museum on February 2. The exhibit will travel to the Corcoran Gallery of Art in Washington, D.C. in April before shifting to Moscow, Tbilisi and Leningrad during the last half of 1990. Organized by Marla Price, chief curator of the Fort Worth museum, Graham W. J. Beal, director of Omaha's Joslyn Art Museum, and Khoroshilov, the exhibition is titled "10 + 10: Contemporary Soviet and American Painters."

The exhibit's own story reflects all the dynamism of glasnost in Soviet art. It began almost by accident on the honeymoon of Gordon Dee Smith, the president of InterCultura, a young, nonprofit organization based in Fort Worth that organizes cultural-exchange museum exhibitions. Smith had asked for an appointment with the Soviet Ministry of Culture to discuss future exhibitions in the United States of Russian medieval art and early Russian avant-garde art. The ministry agreed but set a date in June 1987 that was a few days after Smith's imminent wedding. Afraid that he might lose his exhibitions, Smith accepted the appointment and honeymooned in Moscow.

In the course of their meeting, Genrikh P. Popov, chief of the ministry's Department of Fine Arts and a Moscow University graduate who had studied Buddhist art in Burma, suddenly leaned forward and asked, "Why don't you present an exhibit of Soviet contemporary art?" Taken aback by the proposal, Smith replied that this could be done only if American curators were to come to the Soviet Union to select the paintings. No Soviet government had ever agreed to such a plan before. But Popov shrugged and said "OK."

For Marla Price, a Virginian who had worked on the staff of the National Gallery of Art in Washington before going to Fort Worth, the assignment to go to Moscow and help choose the artists was like that of a 16th-century explorer heading into the uncharted reaches of the globe. "It really was unknown territory," she said. "The whole scene was just not known."

To understand the Soviet art scene, an outsider must understand what all the talk about official and unofficial art really means. These terms once had rigid definitions. Under the Soviet system and philosophy, people do not shift easily from one job to another or, in midlife crisis, decide to give up their job, say, as a customs inspector to become a novelist. People are trained for a particular line of work and, except under



In *Radioactive Background*, Alexei Sundukov expresses conviction that urban life in the Soviet Union is saturated with words.

Tatiana Abalova, a Soviet Ministry of Culture official, and Gordon Dee Smith (right) discuss art with Vladimir Mironenko in his studio.

rare circumstances, stick to it. That is all part of the system of rigid centralized planning. In the field of arts, the system not only insures, in theory, that there are just the right number of writers and painters for the needs of society; but it insures, as well, that the content of their work sticks to the party line. To become an official writer or painter—and thus receive adequate supplies, work space, living quarters, recognition, salary and sales—a young Soviet must receive professional training and then graduate to membership in an official union.

The most notorious case of Soviet fatuousness and bureaucratic meanspiritedness on this issue is that of Joseph Brodsky, the exiled Soviet poet who won the 1987 Nobel Prize in Literature. Unofficially, Brodsky, while in the Soviet Union, blatantly wrote poetry full-time and refused to work consistently at any one job. But since the government and the writers' union did not recognize him as a writer, Brodsky was, in the eyes of the law, living off the rest of society without performing his share of the work. He was, in short, "a social parasite." When Brodsky insisted at his 1964 trial that he was permanently employed as a poet, the judge demanded, "And who said that you were a poet? Who included you among the ranks of the poets?" To the everlasting shame of the Soviet Union, the government convicted Brodsky of "parasitism" and sentenced him to five years of hard labor.

To avoid the charge of parasitism, unofficial artists, until recently, often had to hold down other jobs while painting. Supervising the boiler room in a factory, for example, has long been looked upon as a good job for unofficial writers and artists. A boiler tender is on duty for 24 hours straight, but then has three days off.

When Marla Price first set foot in the unknown world of the underground Soviet art scene in February 1988, she came upon these part-time artists exhibiting to each other, to a few patrons, and to foreign visitors and diplomats in their studio apartments or sometimes in clandestine group shows. Some of the shows featured enough theater, poetry and bizarre dress to make them seem more like happenings than exhibitions.

Five months later, when Price and Beal returned to make the final selections for the exhibit, the scene was in turmoil, for these artists had leapt from obscurity to center stage. The government had started to register their art clubs as informal organizations, thus giving them a kind of official status for the first time. Foreign dealers, curators, artists, collectors and even Sotheby's had been pursuing them. "They went from being underground to becoming celebrities," said Smith. "These artists were pursued like movie stars, when, five months before, no one had heard of them."

All the sudden lavish attention raises obvious questions about fad and fashion. Are the new Soviet artists

no more than a curiosity? Are they attracting attention more for the worldwide fascination with Gorbachev and glasnost than for the quality of their work? Are they any good? Marla Price, a specialist in contemporary art, has no doubts about the ten in her exhibit. "You can't ignore the fact that part of the interest is in where they come from," she said. "But these are ten very talented artists who can hold their own. I expect we will hear from them."

One of the ten, Yurii Albert, a playful 30-year-old painter who likes to mock himself by mimicking some of the work he has seen in Western art journals (one of his works, below, is titled *I'm not Jasper Johns*), insists that these days there really is not much difference between what young Soviet artists are doing and what young Western artists are doing. There has been a parallel development, according to Albert, even though the Western artists work with a "certain erudition" and the Soviet artists in "total illiteracy."

American museumgoers, however, will probably see significant differences. For example, most of the Soviet canvases have textual matter somewhere. "Soviet and Russian culture is, or has been until very recently, a culture of the word," John E. Bowlt, an eminent authority on Soviet art and a professor of Slavic languages at the University of Southern California, writes in the exhibition catalog. "It was and is a society of strong literary expression, and whether we speak of traditional or experimental art, the public appreciation tends to be a narrative and didactic one." In the most extreme example, 31-year-old Konstantin Zvezdochetov, a set designer by training, has based his works in the show on a libretto he has written about Perdo, a land that exists only in his imagination (p. 138). The Perdo mythology, however, is not very accessible: Zvezdochetov keeps the unpublished libretto in a refrigerator in his Moscow apartment.

The Soviet artists exhibit a variety of nonrepresentational styles. As Marla Price explains, most young Soviets cannot conceive of experimenting with traditional forms, like landscapes or still lifes or portraits, the way some contemporary American painters do. The traditional ways—even if you exaggerate and distort them—smack too much of the old ways of official art.

On top of all this, many of the Soviet paintings have a frenetic, hurried finish. It is not hard to imagine a few of the paintings being created during smoke-filled happenings. Some of the works—like the bizarre personal and often religious fantasies of Leonid Purygin, the 38-year-old Moscow painter who signs himself "Purygin the Brilliant"—have a primitive, comical madness (p. 143). But neglect of technique among artists

Series of "I'm Not" works, this one *I'm Not Jasper Johns*, was inspired by art magazines from the West. Artist Yurii Albert, fluent and playful, believes there isn't that much difference between young Soviet artists and Western counterparts in how they portray world.

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One of assemblages from the series *Perdo,* about a made-up land, is by trained set designer Konstantin Zvezdochetov. Perdo is a land of cruel repressions and hot air, the word itself denoting a rude burst of air.

barred from classes, short on supplies and ignorant of the market is not surprising.

The special and even fragile nature of Soviet contemporary art is probably illustrated best by the work of 30-year-old Vadim Zakharov, a member of the unofficial Club of Avant-Gardists in Moscow, who has spent much of the past few years acting out a kind of morality play. Zakharov, continually wearing an eye patch to symbolize the crippled artist in Soviet society, would stage little performances, at clandestine art shows, in which he was attacked by tiny carvings of elephants that represented the philistines who ruled the Soviet art world. Without knowing this, one finds it difficult to fathom a painting like his untitled 1988 canvas that bursts with wonderful gray geometric forms. When you think elephant, however, the abstract forms coalesce into an ear-flapping, mammoth creature. Zakharov has evolved a theory that the artist is in a constant, futile and ultimately boring struggle with the limitations set by a dictatorial society.

Much like Zakharov, Vladimir Mironenko, a 30-year-old graduate of the Gorky Theatrical Academy's Studio School, first attracted attention in the underground art scene. He was involved with the Toadstools, an uninhibited group of youngsters who looked on painting as no different from a satiric theatrical revue. In a series of five canvases titled *Completely Secret (Plan for World Transformation),* Mironenko, using extravagant symbols besmirched by what look like the powdery, red remnants of gunfire, lays down a government-approved scheme for changing the world. Each segment of the strategy bears the stamp of the Ministry of Defense of the USSR and carries the classification "Do Not Remove From Headquarters." After looking at all five paintings, a viewer is convinced that the plan would transform all the geometric symbols of the world—but to no meaningful purpose.

Ironically, Americans will probably look on 37-year-old Alexei Sundukov as the most political of the new Soviet painters. Yet the graduate of the Moscow Higher Institute of Art and Industry, and member of the Artists' Union, is the only official artist included in the touring exhibition. The tradition of Socialist Realism makes his images more natural than abstract. In his troubling *The Substance of Life,* for example, Sundukov paints consumers waiting in line—an ordinary, wearying scene of Soviet life—against the background of Chernobyl-like chaos and horror. Despite this backdrop, no one, not even those who turn to gaze on the turmoil, breaks rank; all keep in line.

The Americans in the "10 + 10" exhibition add to the fun of discovering Soviet art; there is little doubt that they will have a strong influence on what goes on in the Soviet art world in the future. Although Soviet art officials know his work only from art journals, they were anxious for the exhibition to include 37-year-old David Salle. "They consider him a superstar," said Marla Price. "The Soviets want to see him." But a relative unknown, 30-year-old Rebecca Purdum, may have a significant impact as well. Price describes Pur-

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SAAB

dum's work as "born of an inner vision"—wondrous abstract paintings that hint of mists obscuring a distant landscape. Critics have compared her style to the late work of J.M.W. Turner. Her abstract paintings border on landscapes the way, as Price put it, "Turner's great atmospheric landscapes and seascapes hover right on the edge of being abstract."

The Soviets will also be discovering the not-quite-realistic landscapes of 36-year-old April Gornick; the latest work of 39-year-old Ross Bleckner, which moves from his old geometric style to a kind of romanticism; and the monumental still lifes of Donald Sultan, 38.

The Soviet artists in the show are moving swiftly from museum to marketplace. Only a few weeks after the opening of the exhibition in Fort Worth, Soviet émigré dealer Eduard Nakhamkin displayed at one of his New York galleries the fanciful work of Purygin, whom Price described as "the Russian Bosch." Within a few days, a score of Purygins—canvases filled with grotesque monsters and contemptuous prostitutes—were sold at prices ranging from $7,000 to $40,000. In a country where the manager of a factory—a job of great prestige—earns only about $9,900 a year, it is obvious that some of the underground painters are entering a new world of untold wealth.

The new prominence of the 51-year-old dealer is another reflection of the emergence of Soviet contemporary art. Formerly a mathematician at the Riga Polytechnical Institute in Latvia, Nakhamkin immigrated to the United States in 1975. He started his art business by selling the paintings and sculptures of fellow émigrés in New York, an enterprise that earned him little prestige in the art world. "Without looking, everyone said, 'What is this? There is no art in Russia,' " Nakhamkin recalls. But his championship of émigré art put him in a good market position when the Ministry of Culture started to unleash Soviet contemporary art. In January 1989 the ministry and the Artists' Union signed an agreement with him to create a joint venture that would represent thousands of Soviet artists, both official and unofficial, in the United States.

Some of the young Soviet artists occasionally sound as if they believe they have sprung forth like the goddess Athena from the head of Zeus. They admit no antecedents. But, in fact, it is difficult for an outsider not to sense that a long tradition is somehow at work. The links with the early years of the century seem clear. The fury of the 1917 revolution continued to spawn cultural excitement in the young Soviet Union for more than a decade. It was the era when film director Sergei Eisenstein and poet Vladimir Mayakovsky attracted international attention. It was the era when leftist intellectuals in the West felt elated by the new winds coming from the revolution. And it was a time

Anatolii Zhuravlev, photographed in studio, at 26 is youngest in exhibition.

Artist's *Greetings I* exemplifies his belief in symbolic, visual force of words.

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New York-based Eduard Nakhamkin, a Soviet émigré, is an international dealer in the newest Soviet art.

when young Soviet artists were exploring new forms.

There were early rumbles of trouble as progressive artists found the pressures from Communist authorities nearly intolerable. One of the pioneers of 20th-century abstract art, Vasily Kandinsky (SMITHSONIAN, January 1984), had returned to Russia in 1914 and subsequently founded the Russian Academy of Artistic Sciences. But disillusioned with the postrevolutionary artistic climate, he left the Soviet Union for good in 1921. Chagall and other experimental artists, equally disappointed with the cultural climate, also fled the USSR. Still, enough artists like Pavel Filonov and Alexander Rodchenko remained to mark the 1920s and early '30s as an industrious epoch in Soviet art.

The dead hand of Stalinism came down upon Soviet modern art in the early '30s, when the government disbanded the many artists' organizations and affirmed that only Socialist Realism could be tolerated in the world's first Communist state. At its worst, this art resembled fascist art of the '30s. And, even at its best, it denied many 20th-century experimental currents.

From time to time, young Soviet artists, emboldened by their surreptitious reading of Western journals—or by rare, unauthorized looks at Soviet avant-garde paintings in the locked storerooms of Soviet museums; or by exposure to an occasional exhibition of modern American artists, like that of Willem de Kooning and Georgia O'Keeffe in Moscow in 1959—would feel the need to rebel against Socialist Realism. For a while during Nikita Khrushchev's regime there was some tolerance of rebellious art. But Khrushchev was infuriated when he spotted a few examples of abstract work during his tour of the show "Thirty Years of Moscow Art" at the Manège exhibition hall in Moscow in 1962. "Jackasses!" shouted Khrushchev. "We are declaring war on you." That ended the tolerance.

But it did not shut down the underground. Young artists would still paint what they felt like painting, even if they could show it only to one another. In fact, an underground tradition of its own developed where art seemed to flourish best—amid vodka, cigarette smoke, endless talk, comical skits and incessant twitting of the bureaucracy. This world of unofficial Soviet art was special. Vadim Zakharov, the self-styled crippled artist with his eye patch and his endless struggle against elephantine philistines, once described it as a small pond with its own species and its own delicate ecological balance. Gorbachev has churned that pond into a whirlpool. There is no delicate balance now—only breathless, maddening, undreamed-of excitement.

Self-Immolation of the Lion is the work of Leonid Purygin, who creates almost-naive religious fantasies.

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A lot of well-intentioned solutions are being offered. One is that foam plastics, plastic bottles and plastic packaging should be banned.

The fact is that plastics make up less than 8%, by weight, of our nation's waste. Paper and paperboard make up about 36%, glass and metal about 9% each, all by weight. Plastics are naturally lighter, but still, when compressed, account for only about 20% by volume.

If plastics were banned, the need for packaging wouldn't go away. The idea is to substitute other materials which are assumed to be biodegradable, so a landfill would take longer to become full. Studies show, however, that paper and other materials decompose so slowly in today's landfills that the lives of the landfills are not extended.

Recycling must play a part.

In addition to environmentally secure landfills, and more state-of-the-art waste-to-energy incinerators, we believe that a significant answer to America's waste problem lies in recycling. Everything recyclable should be recycled. Yard waste. Paper. Metal cans. Glass bottles. And plastics.

Although plastics recycling is in its infancy, plastics are potentially more recyclable than alternative packaging materials.

In South Carolina, one company recycles 100 million pounds of 2-liter plastic soft drink bottles a year into everything from fiberfill for ski parkas to scouring pads to automobile distributor caps.

In Chicago, another company processes 2 million plastic milk jugs a year into thousands of boards of "plastic lumber" for boat docks, decking, park benches and fences.

In Tennessee, another company processes plastic containers into bathtubs, shower stalls and sinks.

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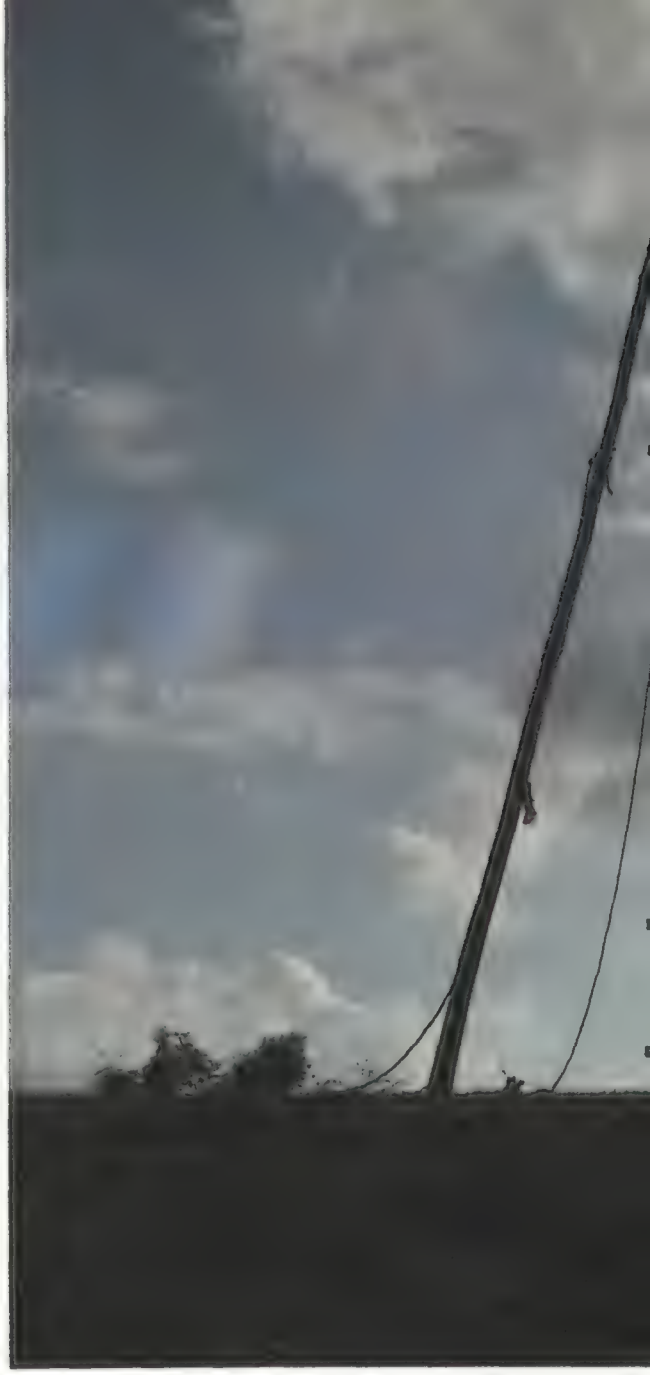

Volunteer firemen in St. James Parish haul willow logs up the levee; the Mississippi is just beyond the rise.

By Mary Ann Sternberg

Putting up the Christmas lights, Louisiana-style

On December weekends, all the action is up on the levee, where once again everyone pitches in to prepare for bonfire night

As dusk falls on Christmas Eve, Nolan Oubre gives the signal to light the string of wooden pyres that seems to stretch to infinity along the spine of the Mississippi River levee. Over his car's PA system, he speaks the long-anticipated words: "It is now 7 P.M.; you may light your bonfires." It is ironic that the leathery, walrus-mustached Oubre would be among those charged with the setting of fires, causing a hundred curtains of purple and orange flame to rise into the black velvet night, crackling and popping and sparking showers of gold along the green flank of the man-made ridge. Ordinarily—as chief of the volunteer fire department in Gramercy, Louisiana (pop. maybe 3,500)—he is in charge of putting them out.

But the fire chief's role reversal is symptomatic of the fever that pervades rural St. James Parish each December. Between Halloween and Christmas, a host of locals devote thousands of hours to the construction of intricate log masterpieces. Most are 25-foot-high, tightly wrought pyramids. Some, like those of industrial maintenance worker Ronald St. Pierre, are detailed reproductions of familiar local subjects, such as a log

At the top of the levee, a bonfire takes shape as logs are dragged into place to be tied to center pole.

Almost a hundred pyramidal pyres will be built, their height and shape governed by local ordinance.

cabin, an oil rig with derrick, a two-story plantation house with double-curved stairway, or a turn-of-the-century locomotive complete with cowcatcher and smokestack (p. 149). A few whimsical constructions—PeeWee's Playhouse or the roughly cut digits of a graduation year—round out the field. But at the fire chief's signal, all of the structures—regardless of artistry or size—are uniformly torched.

Christmas Eve is the only time of year when River Road, once the only highway between New Orleans and Baton Rouge, becomes a curvy, two-lane gridlock from the Mt. Airy town line west to Convent. Nightfall brings thousands of pedestrians, who swarm back and forth among the cars inching along to get a close-up view of the blazing sentinels. The light radiating from within the geometric skeletons makes them look eerily akin to the chemical plants and refineries that dominate the flat landscape.

From the river waft the rollicking soprano notes of calliopes on paddle wheelers up from New Orleans, the hoarse bass of freighter horns and the insistent buzzing of small craft. The bounce of swamp pop and *chank-a-chank* Cajun music mixes with the blare of jam boxes, car horns and firecrackers, while smells of kerosene, sweet smoke, burned powder, beer and gumbo permeate the air.

Lighting bonfires on Christmas Eve in St. James Parish has been a holiday ritual since the 1880s, though its origin is still debated. The most popular explanation is that the bonfires were started to light the way for Papa Noël, the Cajun version of Santa Claus, as he paddled his pirogue to deliver gifts to good Cajun children—but traditionally Papa arrives on New Year's Eve.

Others say the fires were functional, begun as navigational signals to help guide steamboats through the dense December fog; or religious, to light the way to midnight mass. Or the fires may have celebrated Epiphany, the Twelfth Night, when Christmas trees were taken down and burned, and chestnuts and potatoes roasted over the blaze. Most likely, the bonfires were introduced into the area by French Marist

Mary Ann Sternberg is author of A Pelican Guide to Louisiana, *published this year in Gretna.*

Photographs by Philip Gould

An early step in construction involves climbing center support and wiring hoisted-up poles into position.

Final stage of building the pyramid requires pitching the precisely sawed logs to a partner stationed above.

A shrimp boat of the kind used today on the Gulf of Mexico was Gramercy Volunteer Fire Department's offering for last year's bonfire night. Vessel took five weeks to build, three and a half hours to burn.

Sunday before Christmas 1988, cars choked River Road, as thousands of people came from New Orleans and Baton Rouge to check out the final preparations. On the big night, traffic was backed up for 18 miles.

An elated 8-year-old does a little time-traveling aboard Ronald St. Pierre's 19th-century locomotive.

Built by the Class of '89 in Lutcher, PeeWee's Playhouse served as hangout for the high school kids.

Coal-car wheel of masterbuilder Ronald St. Pierre's train shows meticulous work, but all of it will burn.

Welcomed by the bonfires, Papa Noël greets the good Cajun children of St. James Parish along the levee.

priests who, in 1864, took over Jefferson College (now Manresa House of Retreats) in nearby Convent. The Brothers built their fires on the batture next to the river and entertained their students. The practice caught on, but why it was moved from the traditional New Year's Eve to Christmas Eve remains a mystery.

Whatever its origins, the German-Acadian Coast Historical and Genealogical Society attributes the first Christmas Eve levee bonfire to merchant George Bourgeois in the town of Mt. Airy in 1884. He is said to have collected boxes and packing material in which merchandise for his New Camelia Plantation store arrived, massing them into a flaming heap on the levee across from his business. The flames were so large and salutatory that riverboats pulled right up to his landing to join the Christmas Eve celebration. Bourgeois had also built a game room behind his store where local men played poker and ate gumbo. Sometimes, when they arrived with their sons in tow, the entrepreneur gave the boys fireworks and sent them off to the levee to entertain themselves around a bonfire.

By the turn of the century, says Leonce Haydel, the area's acknowledged unofficial historian, scattered, private bonfires were built on Christmas Eve. Trash wood, scrap lumber, old boxes, cardboard, tires and anything else that fathers and sons could scavenge made a good bonfire in those early days.

Whether social pressure eventually demanded a grander style than that of a trash heap, or whether safety demanded more careful construction, the configuration of levee bonfires evolved from amorphous piles into a conical tepee shape. After World War II the bonfire tradition began to strengthen; and the individual bonfires began to reach higher with the introduction of the pyramid shape: the neat, articulated superstructure imposed over a tepee.

Gathering the wood (willow, which is abundant and fast-growing, is the material of choice) is still largely a father-and-son affair. Today a boy's rite of passage is likely to be the first time he uses a chain saw or the day he's allowed to drive the pickup truck, swaying with a bed of ragtag willow poles, back to the levee.

There, on December weekends, the entire community congregates, either to build bonfires or to offer moral support to those who do. The big night itself has evolved into a typical southern Louisiana festival, with souvenir hunters in search of logoed sweatshirts, and long lines of people waiting for a fresh batch of cracklings. But at its heart, Bonfires on the Levee is still a family-style celebration.

Both young and old watch in awe as the levee bonfires finally are set ablaze, sending sparks heavenward.

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Investors high-born and humble throng 'Change Alley as a broker bellows out the latest stock quotes. The value of South Sea Company shares often soared from hour to hour, creating a rush to get rich quick.

By Robert Wernick

When the Bubble burst, all of England wound up broke

Lured by the promise of fast and easy money, coachmen and countesses lost their shirts in the 18th century's premier stock swindle

For Jonathan Swift, the best of men was he who made two blades of grass grow where one had grown before. Swift's friend John Blunt had a different ideal: the man who could take one pound sterling out of his pocket and turn it into two or ten or a hundred, without any physical exertion.

The way to do it, as he proved in spectacular practice, was a newfangled device called the joint-stock company, which nowadays we call a corporation. As a matter of fact, there had been joint-stock companies in England since the middle of the 16th century. Queen Elizabeth herself had thriftily invested in a stock company that financed the piratical attacks on Spanish commerce by Sir Francis Drake—netting the Crown a profit of 150 percent.

Such companies, however, involved a fairly small number of people. But at the turn of the 17th century a newer and now more familiar form came into being: the company to which large numbers of small investors subscribe, as people do today, because they hope to make substantial profits in cash dividends or capital gains.

Investors began to see money-making in a new light

altogether. A share or a bond, they realized, could prove as profitable as holdings in land—and far less cumbersome to administer. Furthermore, while land was taxed, profits from the new paper securities were not.

The moment was propitious: England, which had been winning wars against its commercial rivals all through the century, was now bursting with capital looking for a place to be invested. London's merchants, who by then numbered several thousand, were shrewd, hardheaded men, but they also showed some of the innocent enthusiasm of clever children discovering a new toy.

The men who wound up the toy were called stockjobbers or, as we now call them, brokers. There were no Merrill Lynches or PaineWebbers in those days, just individuals with fast minds—and faster tongues—who did their business in the narrow passageways forming what was called Exchange, or 'Change, Alley at the corner of Lombard Street and Cornhill. They met customers and totted up their accounts at tables in coffeehouses like Jonathan's or Garraway's. Like innovators anywhere, they sometimes aroused distrust and dislike: Daniel Defoe spoke of them as people who "can wheedle men to ruin themselves and fiddle them out of their money, by the strange unheard-of Engines of Interest, Discounts, Transfers, Tallies, Debentures, Shares, Projects."

William III's wars with Spain created debt that helped launch Bubble scam.

The old aristocracy, the landed nobility that had ruled England for centuries, affected to look down their noses at this new breed of upstart, but wealth and strength were passing into the hands of new men. And it was just such men who in 1710 founded the South Sea Company, greatest of all joint-stock enterprises; men like John Blunt, the son of a shoemaker; Edward Gibbon, a linendraper whose grandson (p. 170) would become a famous historian; Robert Chester, a goldsmith; James Craggs, barber and footman who would work his way up to become Joint Postmaster-General, a position that allowed him to open people's mail and get valuable advance information about their business plans. When these men offered John Aislabie, Chancellor of the Exchequer, a chance to make 35,557 pounds 10 shillings profit on a fictitious sale of South Sea stock, he did not hesitate to dip his hand into the plebeian till.

He was not alone. The royal family, the "royal ladies" (the king's two mistresses—the thin Duchess of Kendal and the fat Countess von Platen), members of the House of Lords and members of the House of Commons all accepted substantial (and illegal) favors from the directors of the new South Sea Company. People from all over England—country squires, bishops, literary people, theatrical people, ordinary people—joined in the rush for profits. It was the first of the speculative booms that have been features of economic life ever since.

The original idea for what became known as the South Sea Bubble has been ascribed to Defoe, but it appears in fact to have come from the fertile brain of John Paterson, a talented Scot who had migrated to London like so many of his penniless countrymen. Paterson was not an impractical fool—one of his brainchildren was the Bank of England. But "his whole capital," says historian Macaulay, "consisted in an inventive brain and a persuasive tongue." In 1695 he talked Scotland's Parliament in Edinburgh into approving—and 1,400 unsuspecting Scotsmen into investing in—a harebrained, in fact, insane, scheme to found a colony in Darien, the Isthmus of Panama. Its ostensible aim was to exploit the fantastically lucrative trade possibilities of the region, but no one seemed to notice or care that Darien already belonged to the King of Spain, who would not give it up without a fight. In 1698 and 1699, two expeditions actually sailed from Scotland with several thousand would-be settlers, almost all of whom either died of fever or ended their days slaving as indentured servants in the sugarcane fields of the West Indies.

His successor, Queen Anne, drove the Exchequer even more deeply into debt.

Despite these disasters, in 1710

Robert Wernick's excursions into art, history and sundry subjects have so far resulted in 50 SMITHSONIAN *articles (see* Mall *column, page 26).*

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Paterson was still inventing, still persuading. This time he came up with a scheme for a company that would monopolize trade with the South Seas—that is, trade with the coasts of the Spanish possessions in South America. That England was currently at war with Spain was no matter. The long war of the Spanish Succession that had drenched Europe in blood for years was finally winding down. Robert Harley, Earl of Oxford, who was secretly beginning peace negotiations, thought it a wonderful idea to wring some commercial concessions out of the Spaniards.

Enter John Blunt, by profession a scrivener, a man who copied out in beautiful script the legal documents and agreements that had to accompany any business transaction. An alert scrivener became acquainted with all the important people engaged in such transactions. He also acquired full knowledge of the little details, the fine print, in the contracts and could put these to good use—as subscribers to South Sea stock would later learn at their own expense.

There was no law or practice prohibiting the use of such privileged knowledge for personal gain. Eighteenth-century England had no word for, and no real sanction against, what is all too familiar today as insider trading. Even Robert Walpole, the master politician who shaped the parliamentary system as we know it, saw "nothing more reasonable and just" than using his official position to do favors for relatives and friends.

Until 1757 there was no law, either, against obtaining money under false pretenses. In 1703, when a case came to court about a man who had acquired some money by masquerading as a creditor's agent, Lord Chief Justice Holt put the question to the jury with the hard common sense of Old England: "Shall we indict one man for making a fool of another?"

John Blunt would have known how to answer that question. He had begun his career by leaping into the shifting world of the new joint-stock companies, where the supply of fools seemed to be unlimited. People were eager to invest, and there were so many projects for them to put their cash in that it didn't seem to make any difference what was offered. James Puckle's project for a machine gun that would fire both round and square bullets, depending on whether the enemy was a Christian or a Turk, for instance. A project for a mechanical piano. A project for a typewriter. Sir Richard Steele's project for a portable aquarium that would bring fresh fish to London markets. "I can measure the motions of bodies," said Sir Isaac Newton, "but I cannot measure human folly." He himself would lose £20,000 dabbling in South Sea stock.

The South Sea scheme offered Blunt and his colleagues a chance to borrow and lend money, more or less like a bank, with full government backing. The necessary papers were quickly drawn up. But before actually opening its doors, the South Sea Company had to receive the authorization of Parliament, and there was strong opposition from the established powers, notably the Bank of England.

Blunt figured out an irresistible bait for the solid country squires who formed the backbone of the House of Commons. Next to the Church of Rome they most hated the national debt, which had mounted to millions of pounds during King William's and Queen Anne's wars against archenemy Spain. The growing debt meant increasing taxes. In exchange for a monopoly on trade with Spanish America, Blunt and his South Sea Company promised to take over large chunks of the national debt. This meant that people who had government obligations—debentures, bonds, annuities—would exchange them at par for shares of stock in the South Sea Company, giving up the security of a fixed income for the prospect of

Melding "cunning with mediocrity," Earl of Oxford was first company head.

Arch-swindler John Blunt kept the pot boiling by issuing ever more shares.

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unlimited dividends. These would come from the unlimited profits of trade with lands running over with gold, silver, and people who possessed a voracious appetite for such typical products of English commerce as woolens, sealing wax, clocks and Cheshire cheese, not to mention African slaves. It was too good an opportunity to pass up. In May 1711, Parliament authorized the sale of South Sea Company stock, and the public scrambled to invest £9,411,325 in it, buying up the entire offering.

The only thing wrong with this scheme that promised something to everybody was the absence of any profits at all. None of the directors of the South Sea Company had ever been to the South Seas. And none of them could have had any idea of how much, if any, money was to be made there. Trade with his New World colonies was the most valuable resource, almost the only resource, left to the King of Spain, and it was not likely that he would share it willingly.

But the company directors never really took the trade with South America seriously. After the Treaty of Utrecht brought peace to Europe in 1713, the company did spasmodically attempt to take advantage of one of the treaty's provisions in trying to get the right to ship 4,800 African slaves a year to the Spanish colonies, in addition to 500 tons of cargo. Before they were through, they also toyed with the idea of importing jackasses from Spain and actually fitted out ships for whaling in Greenland waters. Very little profit resulted. The company blamed the sullen opposition by Spanish bureaucrats, though it might equally have blamed the dishonesty of its agents—or its own inefficiency. In any case, the directors had little time to waste on trade in material objects. What they wanted was a company that could issue vast amounts of stock to be manipulated as they saw fit. For ten years, in that attempt, they proved to be masters.

In Paris, financier John Law's bold investment scheme also came to grief.

Financial skulduggery as we know it today was then in relative infancy, so Blunt had to improvise as he went along. Realizing that to keep things going a steady flow of money was necessary, he worked out an efficient pumping system. Because he had government approval, he would periodically float a new loan at favorable interest rates, then promptly put out a new issue of stock under attractive terms that would lure the cash right back in. He invented margin trading by allowing purchases on the installment plan, with only 10 percent down. He made sure that most of these transactions were on paper. When cash did turn up, it generally went quickly into the pockets of the directors or their well-placed friends.

Such friends were needed because it was good publicity to have dukes, duchesses, bishops and famous actresses ostentatiously showing confidence in the company by buying its shares, and because their support was vital for getting favorable legislation passed in Parliament. Robert Knight, the company cashier, kept a green book in which he marked the transactions by which a good portion of the ruling class of England was made part

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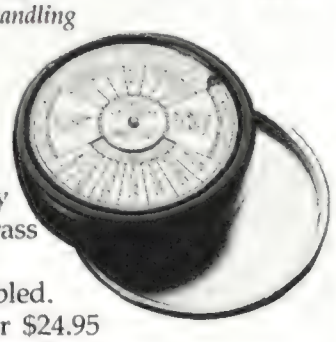

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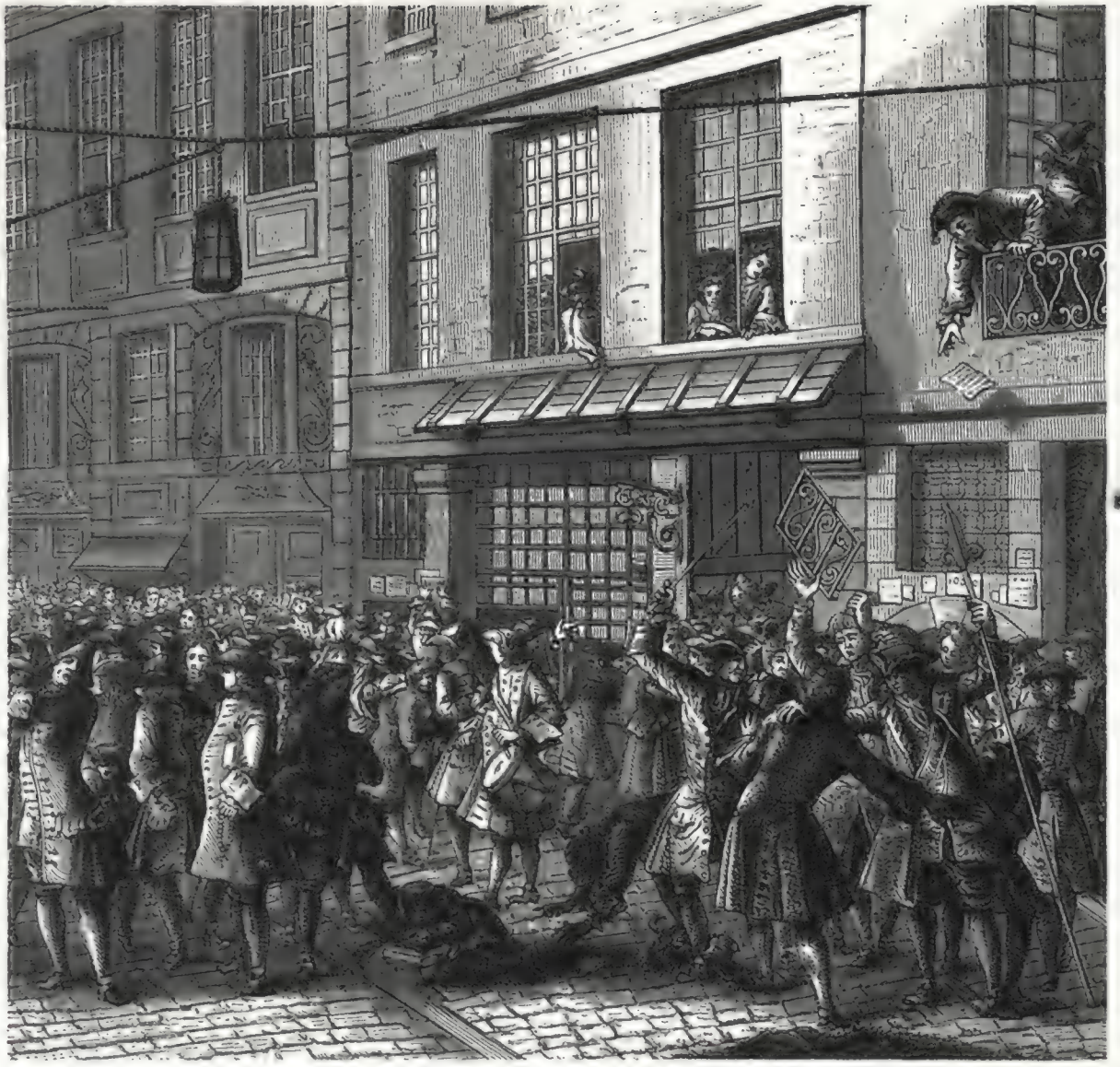

At height of John Law's prosperity, Parisians besiege his headquarters on Rue Quincampoix in frenzied bid to buy Mississippi Company shares.

of the South Sea speculation. Depending on their importance, they would be issued more- or less-sizable blocks of shares, for which they would not have to pay a penny. When the stock went up, as it always seemed to do, it would be quickly sold to the clamoring public, and favored shareholders would pocket the difference.

In a fast-moving market the profits could be enormous. James Stanhope, Secretary of the Treasury, one day collected £249,530, representing the difference between market value and the £60,000 registered as his purchase price a few months before. Parliamentary investigators later tracked down some £574,500 in out-and-out bribes, which Robert Knight slipped into the company books disguised as sales and loans "to sundry." As much as one-third of that "sundry" may well have gone to King George I and his son the Prince of Wales. They detested each other, but under the wings of the South Sea Company they could come together. The company directors always prided themselves on being strictly neutral in politics.

As long as most of its operations were on paper, and as long as Blunt's pumping machine could keep the paper in motion, the South Sea Company had nothing to worry about. Some money, though, inevitably slipped away when investors cashed in their profits. "Mrs. Barbier, a famous singer at the New Play House," said a 1720 news item, "having gained about eight thousand pounds by South Sea stock, has sung her last Farewell to the Stage." Such things only attracted more investors. Profiteers might put their winnings into gilded coaches or country estates—the price of all kinds of luxury goods went soaring—but they

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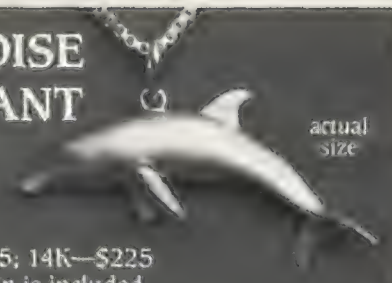

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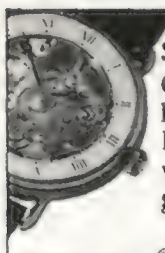

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were all too often tempted to mortgage their new property to put money back into 'Change Alley.

A more serious danger came from across the Channel. John Law, the most brilliant financier of his age, could not come back to England because he was under sentence of death for murder—he had killed a man in a duel back in 1695. In exile in Paris, he devised a plan for stirring up the sluggish French economy and dragging the richest nation of Europe into the modern world. By 1719 he seemed in sight of his goal; he had talked his way into taking over the whole national financial system (SMITHSONIAN, January 1976). The heart of Law's scheme was his Mississippi Company, formed to exploit the resources of France's colony in North America. Unlike the South Sea Company's plan, Law's had a basis in reality, for the colony consisted of the entire Mississippi River valley, with a potential for fabulous riches in fur, tobacco and other commodities. Stock in the Mississippi was selling and gaining very well, a bit too

German import, George I, supposedly suffered huge losses when Bubble burst.

well after a while, for everyone in France wanted to get in on the profits. Soon the narrow Rue Quincampoix, site of Law's office, became a madhouse where ladies of quality and footmen trampled one another in their rush to bid up the price. But the speculative storm that began to roar out of control in Paris was bad news for the South Sea directors in London; they could see good English money sailing across the Channel to join it. The only defense available was to push up the price of South Sea stock. Indeed, this was the only way they could stay in business and pay the dividends they had promised. They had the company buy up large quantities of its own shares. They floated new loans. They put out new stock issues. In exchange for new shares, they offered to assume more national debt.

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And it worked. The price of a single share rose inexorably upward, £250, 400, 600, 800. A major part of the national debt was in the form of annuities, and their holders swarmed by the hundreds through the South Sea offices to sign up for the exchange. In 'Change Alley everyone was going wild. It was said that you could buy your stock at one door of Garraway's and sell it at a profit going out another. King George made John Blunt a baronet in recognition of "his extraordi-

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nary services in raising public credit to a height not known before." In July 1720, the stock was quoted above £900.

The end had to come sometime, as it had already begun to do in Paris, where John Law's great structure was going up in smoke. The South Sea directors probably hastened the disaster by their own ambition and greed. To choke off competition from anyone else who might have a desire for the public's cash, they actually got a bill passed forbidding the sale of stock in any joint-stock company not authorized by Parliament—the so-called Bubble Act.

During the summer the atmosphere turned ominous. The plague had arrived in Marseilles and was moving north, killing thousands and spreading a sense of gloom, a feeling that mankind was being punished for its sins of greed.

The price of the stock obstinately refused to move above £1,000. In desperation, the directors announced they would pay a 30-percent dividend for the current year and guaranteed a 50-percent dividend for ten years to come. This rate was based on par, or the value of a share of stock as originally issued (at about £100). This was fine for anyone who had bought

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Contemporary cartoon figure laments greed, folly, that ruined thousands.

in early. But for those who got in at £1,000, it was a disaster. People quickly figured out that, having purchased the stock at roughly ten times its original price, a dividend of 50 percent of par was only 5 percent for them. In effect, the company had set a ceiling on capital gains. And besides, where would the money come from to pay for even that 5 percent? A kind of episodic war with Spain was on again. Without the possibility of Spanish trade, just what resources did the company have to rely on?

These questions were not the sort of thing the South Sea directors wanted to hear. They preferred customers like the Duchess of Rutland, who wrote her agent, "I am almost sure I can mack an advantage by bying today in the South Seas with the hundred and four score pounds still in your hands, so I would bye as much as that will bye today and sell it agane next week." (As long as people like Her Grace are in the market for capital gains, a stock market boom can flourish. When they begin to calculate the exact rate of return on their investment, it is sure to be doomed.)

At the beginning of September 1720, South Sea stock sagged to £830, then to 750, to 575, to 370. By the end of the month it stood at £180. Blunt's nephew Charles cut his throat with a razor. Blunt himself—Sir John, as he was now—narrowly escaped with his life when an angry speculator tried to shoot him down in the street. He had taken the precaution of selling out all his stock near the high in August.

The collapse of the South Sea stock led to a collapse of all credit. By October it was clear that a financial crisis had erupted in England. No one wanted paper anymore. The real estate market collapsed. Unemployment, especially in the luxury trades, spread. So did bankruptcies. The government fell.

Everyone who had had any dealings with the South Sea Company, and that meant almost everyone of consequence in Great Britain, was in a rage and a financial fix. Robert Walpole, England's most powerful parliamentary leader, came up with a sensible scheme for bailing out the company that somewhat resembles our most recent savings and loan bailout. With the help of the Bank of England, the losses were split evenly among all the aggrieved parties and everybody got back to business. Wal-

In this savage Dutch caricature, c. 1720, a failed John Law hawks his shares.

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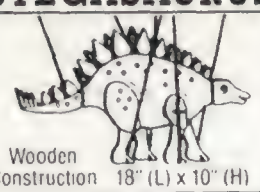
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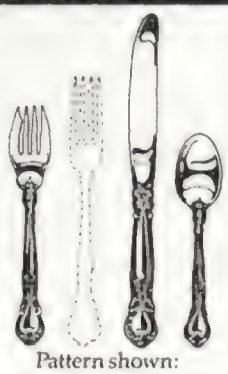
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Edward Gibbon wrote *Decline and Fall*, funded by forebear's Bubble profits.

pole's motto was "Let sleeping dogs lie." But the people and the Parliament were in no mood to let the scoundrels who had bilked them of so many millions of pounds get off scot-free. They insisted on a full inquiry which, before it was through, dragged many a distinguished name into the mud. Blunt himself turned state's evidence, providing juicy details about the royal ministers and even the royal mistresses. James Craggs, the Postmaster, swallowed poison.

In the end, Parliament took violent revenge on all the directors. It totted up their net assets and confiscated the bulk of them, some £2,000,000, to be distributed among stockholders. They calculated Blunt's worth at £183,000 and left him £5,000. Francis Hawes, who had made many enemies, had a net worth of £40,031, 0 shillings, 2 pence. They left him a measly £31, 0 shillings, 2.5 pence.

One big fish that got away was the cashier Robert Knight. He had slipped off to Calais, taking with him what he described as "little more than a sufficiency to maintain myself," and the green book in which all the names and numbers of the illegal stock transactions were recorded. He hid

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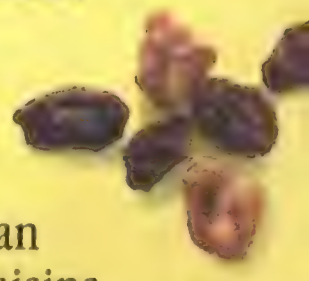

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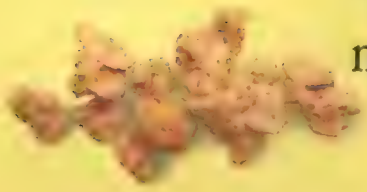

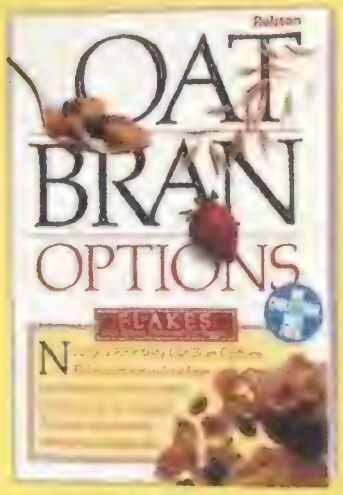

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out for a while, but one day British agents tracked him down in the Low Countries. He was clapped into a dungeon in Antwerp, and extradition papers were drawn up. But then the authorities recalled an ancient ordinance called the *Joyeuse Entrée*, under which the first Hapsburg ruler of the province of Brabant promised that no one imprisoned there would ever be extradited for trial.

Whether this applied to a foreigner like Knight was debatable, and while they were debating it he dug a hole through his prison wall and disappeared. Popular belief, with which it is hard to disagree, was that while one branch of the English government was pressing for his return to face the wolves, another was bribing the officials to make sure he never came back with his green book in hand. At any rate, he ended up in Paris, where he built himself another fortune and lived quite comfortably, though he was said to visit Calais once a year and look across the water, groaning, as a certain Lady Irvine put it, "for the leeks and garlic of England."

As for Sir John Blunt, he lived out his life in modest obscurity in Bath, having adequately provided for all 17 of his children.

The investors were finally quieted down with a settlement in August 1721, which left them with something like £140 per share. For the few who had held on to the original offering at £100, this represented an actual profit. The others swallowed their losses and vowed that nothing like the South Sea Bubble—"the deepest Villainy and Fraud that Hell ever contrived to ruin a Nation," as Lieut. Gen. Charles Ross, M.P. put it—would ever happen again.

Such vows are not meant to last. The past 270 years have seen so many speculative frenzies, booms and busts that historians disagree as to how to rate the South Sea Bubble. Was it a national calamity with ill effects rippling on for years, like the great crash of 1929? Or was it just a hiccup, like the great crash of 1987? Looking at the

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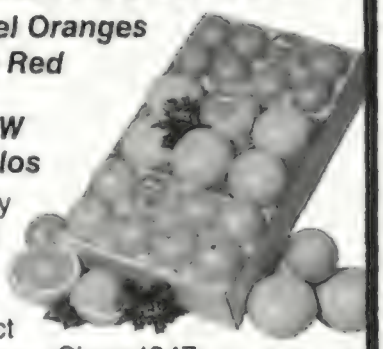

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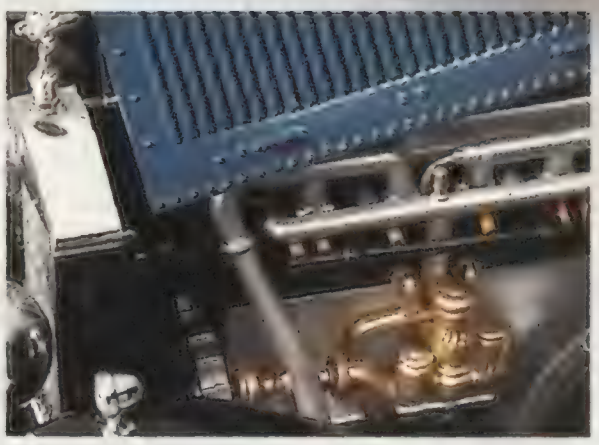

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history of England in the 18th century, a period of increasing wealth at home and expanding empire abroad, it would seem at first sight that the great crash of 1720 was of no great consequence.

It did, however, have some long-range effects. For decades, joint-stock companies languished in dreadful disrepute. Writing 50 years after the crash, in *The Wealth of Nations*, Adam Smith used the Bubble as an example of the inherent defects of a corporation as opposed to a partnership. Modern corporate directors, who like to cite Smith as Holy Writ, might be surprised to learn what he thought of corporations: "The directors of such companies, being the managers of other people's money rather than their own, it cannot well be expected that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. . . . Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company."

For John Carswell, author of the most recent and most authoritative account of the South Sea Bubble, the eclipse of the joint-stock company meant a stifling of the vital forces of the British economy. The outburst of inventiveness that had marked the turn of the century temporarily petered out for lack of adventurers to put their money into visionary projects like typewriters and mechanical pianos. There was a working steam engine in Cornwall 70 years before James Watt's, but no one had the daring to exploit it properly. A couple of generations vegetated before the great entrepreneurial boom known as the Industrial Revolution really began to transform the world.

It is always fun to speculate on what might have been. Suppose that there had been no South Sea Bubble to be pricked, with all its attendant scandal, and that joint-stock entrepreneurs like James Puckle had been allowed to go on trying to turn their dreams into reality. If the British Army had had Puckle's machine gun firing square bullets at Lexington and Concord, how different the history of the world might have been.

Hogarth's Bubble satire, 1721, castigates evils of speculation. As citizens of every stripe straddle South Sea wheel of fortune, Honesty is broken on wheel (foreground) and Honor flogged before monument to scandal.

Raul Julia

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Book reviews

Hokusai: One Hundred Poets
Peter Morse
George Braziller, $80

If, in the Japanese style, this country declared great masters in the arts to be National Treasures, George Braziller surely would have been so designated long ago.

Again, if the Japanese themselves awarded that title to non-Japanese, Mr. Braziller would rate it now. The reason is that most of us know works of art primarily through reproductions. Those who have seen virtually all of the great museums and other art collections still rely on reproductions for serious thought about art. Often enough, our reliance is misplaced and memory itself is warped by the intervention of bad reproductions, especially those on slides. It is an ancient complaint of visitors to Italy that the murals certainly have faded since first seen in Art Appreciation 101.

The great exception, the absolute master of color art reproductions, is George Braziller, and here he goes again with a volume of breathtaking beauty to add to the four Japanese books he has already brought out, three from Hiroshige, one other from Hokusai—the *One Hundred Views of Mt. Fuji.* The color in the new book is superb, reminding us that until Hokusai, most Japanese artists used local color only: painters and printmakers used the color they *knew* was there in the plum blossom or chrysanthemum. Hokusai used the color he saw, affected as it was by the time of day and the atmosphere. This is why the Impressionists so adored him when Japanese art was revealed in Europe at the Paris Exposition of 1867.

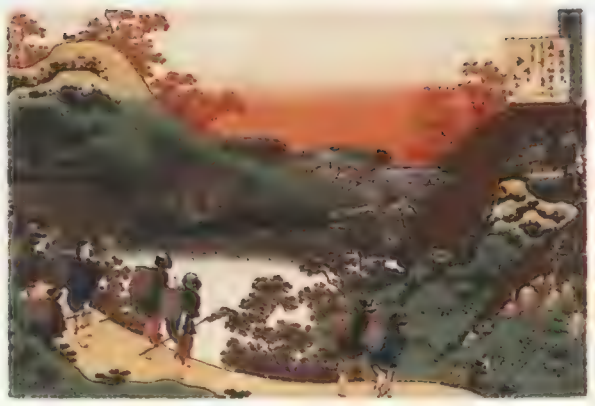
This is actually the first publication anywhere, including Japan, of the complete Hokusai drawings and wood-block prints for the *Hundred Poets.* Like the *Hundred Views of Mt. Fuji,* the *Hundred Poets* was a work of Hokusai's old age—he lived to be 89—and is full of the technical mastery of the artist and bubbling good spirits of the man. But, because it was started so late, *Poets* was never completed and has appeared only as the fragmentary 31 color blocks actually printed. The present edition, for the first time, includes the drawings Hokusai made for the blocks that were never cut. A few of them, having been lost relatively recently, are shown as the mechanical reproductions made in Paris in the 19th century.

Clearly, Peter Morse has had much more to do with the making of this book than just writing an introduction and commentaries. Onetime print curator at the Smithsonian Institution, Morse is a research associate at the Honolulu Academy of Arts, where East has been meeting West in the arts longer than anywhere else. He is now completing the catalogue raisonné of Hokusai's works and has drawn upon it.

Morse does more than that. He offers a detailed explanation of two devices Hokusai used for comic effect: a fictional "nurse" who totally misunderstands the poem at hand (the drawing is based on her misunderstanding); and more important, Japanese puns, which are similar to but profoundly different from those in English (puns in Japanese are made solely of homophones and may be "meant quite seriously," while in English, close is good enough and there is added fun in a pun you really have to reach for).

Both of these scholarly addenda are very good to have, for in the pictures alone there are a lot of laughs in Hokusai. Laughter, in fact, is one of the basic elements in his work; without being receptive to that, you miss the point of many of the prints.

In English we have a kind of instinctive, automatic contrast between the sublime and the ridiculous. We think they cancel each other out. They don't, as can be seen in the work of at least half a dozen silent-movie comic actors, starting with Chaplin, who, like Zero Mostel on the stage, was sublime and ridiculous simultaneously. *Don Quixote* provides the supreme literary example of the combination.



Hokusai's red leaves and sunset capture autumn's loneliness, sadness.

Hokusai is precisely that in art. The fishermen leering at the bare-breasted female abalone divers are ridiculous, but they are part of a sublimity achieved in that particular print, which mixes land and water together with the same insouciance. People are jolly, more often than not, in Hokusai's world; there is a spring in their walk and a torque to their stance, a kind of Oriental contraposto: what Michelangelo could have done if he'd been funnier—and Japanese.
Frank Getlein
Author and critic
The definitive, full-scale monograph on Hokusai, the first in English—a superbly realized labor of both impeccable scholarship and love—has just been published by E. P. Dutton at $50. The author, Richard Lane, one of the acknowledged masters of Japanese life and culture, appropriately dedicates the magisterial work to Hokusai's shade, which is just right. The large-format volume has 93 color and 270 black-and-white illustrations, and an appendix with 242 annotated illustrations. Ed.

Honorable Justice: The Life of Oliver Wendell Holmes
Sheldon M. Novick
Little, Brown, $24.95

Supreme Court Justice Oliver Wendell Holmes jr. lived for nearly 94 years and served on the high court for almost 30—an astonishing tenure considering that he was 61 when President Theodore Roosevelt appointed him. Equally surprising is that, for all of Holmes' influence and citability, this is the first full-dress life of the man to be written.

He was born in 1841 to a couple of "Boston Brahmins": his father, a physician and noted essayist, was responsible for the term. Young Oliver grew up a familiar of the brothers James (William

BOLLA

Il vino classico d'Italia

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and Henry), the brothers Adams (Henry and Brooks), and sundry Lodges and Lowells; his parents were summer neighbors of the Herman Melvilles and were friends of Emerson. Holmes' Harvard classmates dubbed him class poet, but after harrowing service in the Union Army (he was wounded three times in as many years), he forsook literature and philosophy and entered law school at the age of 23, in accordance with his father's wishes.

Despite misgivings about the obscurity in which most lawyers practice, the ambitious Holmes joined a Boston firm and toiled away. He married within his circle—it was a long, affection-filled but childless union—and moonlighted on legal research and writing. In 1881 he published *The Common Law,* his demystifying study of the evolution of court-made law. Its ringing opening sentence, "The life of the law has not been logic; it has been experience," served notice that here was a cobweb-clearing approach to the subject: Holmes was determined to expose the instincts and value judgments that lay behind lawyers' pious invocations of principle. A year later, in March 1882, he was hired as a professor at Harvard Law School. During that year, his Republican friends got him appointed to the Massachusetts Supreme Judicial Court—the beginning of his half-century as an appellate judge. In 1889 Holmes was Chief Justice of Massachusetts; then, in 1902, he was appointed an Associate Justice of the Supreme Court of the United States.

He enjoyed judging because his gifts—curiosity, good sense, a facile prose style—allowed him to excel at it and because it invoked the dutifulness that was part of his patrimony. So as to rule more knowledgeably on socioeconomic issues, author Sheldon Novick reports, Holmes "began a systematic course of reading, beginning in the seventeenth century with Hobbes's *Leviathan* and continuing with Hegel, Karl Marx, Herbert Spencer, and William Morris on socialism." Edmund Wilson rounded out *Patriotic Gore,* his study of American Civil War literature, with a long chapter on Holmes, in whom he discerned a "jobbist," one who "is alone with his job and with the ideal of touching the superlative" through it. (Lofty though its status may be, judging is an unalloyed job—rather than, say, an art—in that its practitioners can work only on the cases that happen to come before them.)

Holmes needed Court chaplain's help in learning to fasten copious robe.

In spite of his knack for conciliation on the high court, Holmes is remembered primarily for his dissents, many of them joined in by his friend Justice Louis Brandeis. The most eloquent of these was the dissent in *Abrams v. the United States,* in which Holmes argued for the broadest possible freedom of speech because "the best test of truth is the power of the thought to get itself accepted in the competition of the market. . . ."

His most durable contribution, however, may be his undermining of "substantive due process," the theory by which judges used the due process clause of the Fourteenth Amendment to overturn laws regulating commerce. The theory was almost invariably wielded in favor of owners and against workers—for example, to quash child labor laws—and Holmes attacked it in opposition to his own political party. Substantive due process was interred not long after his death, when President Franklin Roosevelt's appointments changed the composition of the Court.

Novick, himself a lawyer, is a sound, if dry, biographer. His research is impressive, he simplifies legal arcana without distortion, and he wisely lets the colorful Holmes speak for himself whenever possible. For example, Holmes quips to an old friend that "a paradox takes the scum off your mind"; and asks, in old age when his eyes tire easily and his clerks are in the habit of reading to him after the day's work is done, "Shall we have murder—or shall we improve our minds?" He was no dour slave of duty, but a man who loved life and his work so well that he forged them into one thing.

Dennis Drabelle
Attorney and writer

Fred Allen: His Life and Wit
Robert Taylor
Little, Brown, $19.95

Of actors, Fred Allen said, their "success has the life expectancy of a small boy who is about to look into a gas tank with a lighted match."

Allen was never such an incautious boy. He was a great comic actor, who delivered that line with a wry, crackling voice. Moreover, he was the man who wrote the line and created many more images—vivid, acerbic, often poetic. Herman Wouk, five years a gag-writing apprentice of Allen's, called him "the best comic writer radio ever developed."

And though Allen's success and life span far exceeded the imprudent boy's (he lived more than six decades and was a radio star for 18 years), he is the forgotten man in the pantheon of modern comedians. Perhaps that is because he never made the transition to television. Or because he let his fellow performers, his characters, his lines, upstage him. Or simply because other stars of vaudeville and radio—George Burns, Bob Hope and Jack Benny—were hardier. All but Allen were, in varying degrees, still in the limelight in the 1980s.

Allen is well remembered here, however, in the first biography of him—more than 30 years after his death. Robert Taylor, *Boston Globe* critic and columnist, is a longtime Boston arts and entertainment reviewer. Distance from, as much as familiarity with, his subject has served Taylor well. This book has nothing in common with the current vogues of "up close and personal" gossip mongering and psychobiography, or with the traditional servings of oft-told anecdotes spliced by clichés. Taylor hasn't sought to rival Allen's wit here, though his own is considerable.

Fred Allen was the last of the names adopted by John Florence Sullivan, a poor Cambridge, Massachusetts, Irish youth whose mother died young and whose father drank himself out of work. He took up juggling and was on the road, honing his act as "The World's

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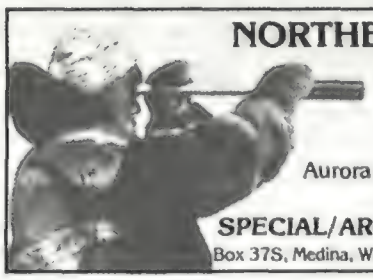

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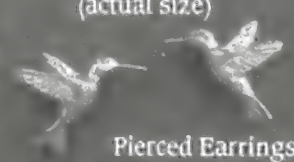

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Worst Juggler," by the time he was 20. There was less desperation, more compassion and order about Allen's life in those years than such circumstances would suggest. "Haphazard as his life had been," Taylor writes, "in an emergency he reflexively discovered supports: Aunt Lizzie, the church, the sorcery of words."

Allen fashioned his own comic spells in radio, but even in his earliest days of vaudevillian rim shots, his talent for writing and ad-libbing the bon mot were evident. To the old saw "that was no lady, that was my wife," Allen wrought the conversational twist, "Who was that oboe I saw you with last night?" "That was no oboe; that was my fife." While such jibes may seem hackneyed or forced now, they were fresh and distinctive then.

Allen's originality and discipline were well tested by radio, a medium he and Benny were the first comedians to master—by calmly being themselves in the midst of an absurd parade. Allen fretted "I've used up my whole life" in his first radio half-hour, yet sustained weekly shows for nearly two decades. That gentle reign ended, "a casualty of the greed it trounced from week to week," as Taylor writes, beaten out by a rigged game show, *Stop the Music,* hosted by Bert Parks.

Some of the characters from Allen's Alley, a device which allowed the comedian to knock on doors and ask opinions of various characters, usually with zany results, survived the next jump, to television, though without acknowledging their origins—nagging Mrs. Nussbaum was warmed over as Molly Berg; Titus Moody, the quintessential Yankee, as the Pepperidge Farm cookie salesman; Sena-

Allen's genius for impromptu remarks earned him title "Guy with Blitzwits."

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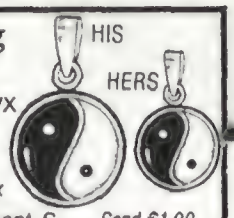

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tor Claghorn bellowing "That's a joke, son!" as the rooster Foghorn Leghorn.

But Allen did not cross that video obstacle, except for appearances on *What's My Line?* Nor did he make an impact in films. As Taylor puts it, "He did not photograph well, and his attitude toward the camera was shy and vigilant." But, Taylor points out, balking at that hurdle did not put a stop to Allen's career. He'd never thought highly of television, noting "The reason why television is called a medium is because nothing on it is ever well done," and defining it as a "device that permits people who haven't anything to do to watch people who can't do anything."

He'd already turned his attention toward writing, with his light and lyrical accounts *Treadmill to Oblivion* and *Much Ado About Me.* A joy in language distinguished his prose, as it did his radio scripts and vaudeville routines.

Taylor captures that gentle touch here: the forgotten warmth and corny ethnicity, the silly, famous feud with Benny. From week to week the two friends gleefully traded insults—Benny "couldn't ad-lib a belch at a Hungarian banquet." Until Allen was born "nobody knew what a cramp looked like." The feud, referred to as the "Punch and Benny Show," was the vehicle for hilarious confrontations and went on for months, with periodic recurrences.

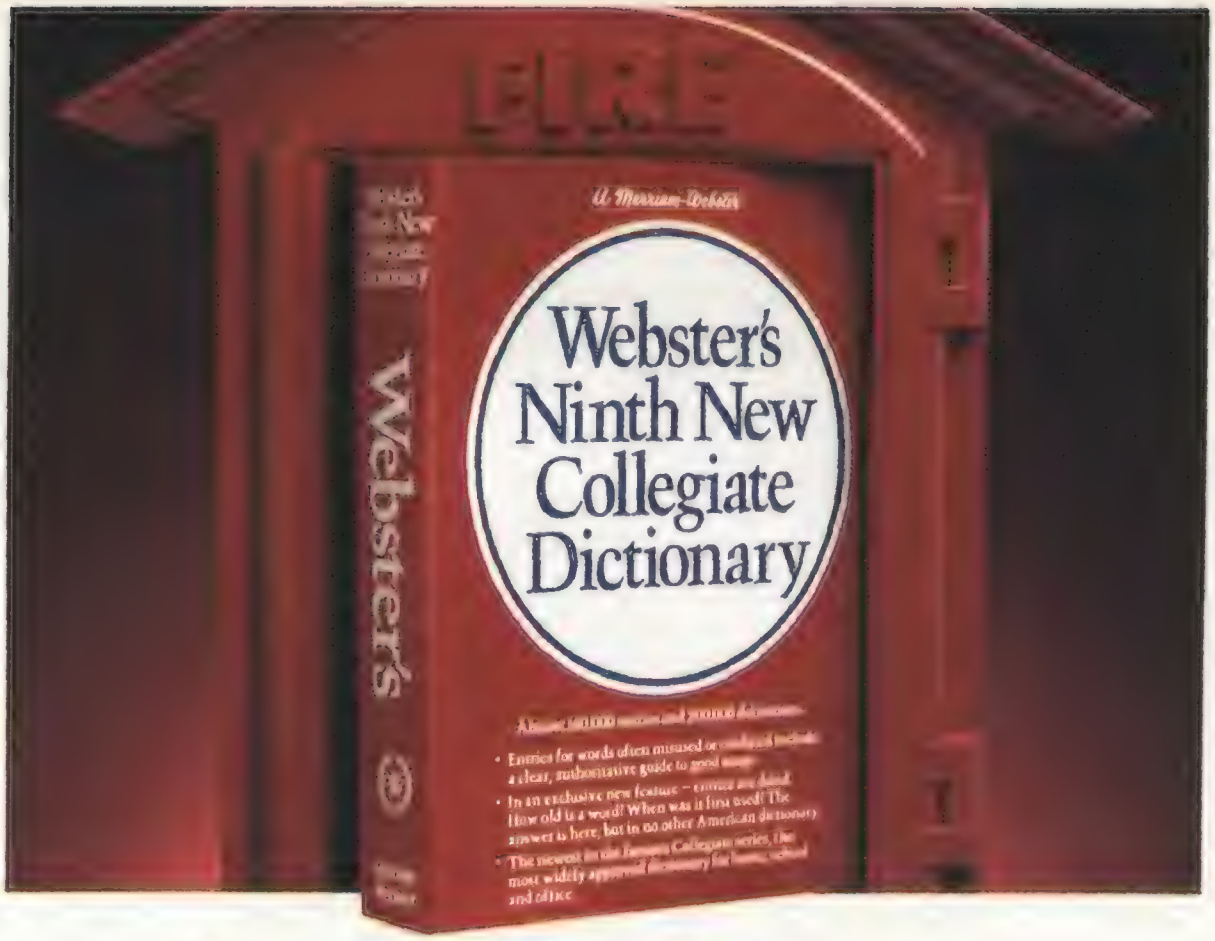
What is depicted tenderly is not just Allen's genius but his humanity. He was, says Wouk, "a role model and still is. . . . Fred was one of the most honorable men I ever met." To Allen, a celebrity was a "person who works hard all his life to become well known, then wears dark glasses to avoid being recognized."Allen worked hard, but to entertain. Unavoidably a celebrity, he never hid behind his fame.

He and his beloved wife and radio companion, Portland, summered in a modest cottage in a "Maine town so dull the tide went out and never came back."

Rather than a flame over the gas tank, Allen offered "a small lamp hung out in the darkness of our time—to cheer us on the way."

That was Allen's own definition of a book. In his, Taylor concludes, "Fred Allen's voice can still be heard, faint but clear, inviting us to find its wavelength." The signal beams strongly in this book.

Don Lessem
Massachusetts writer and editor,
author of *The Worst of Everything*



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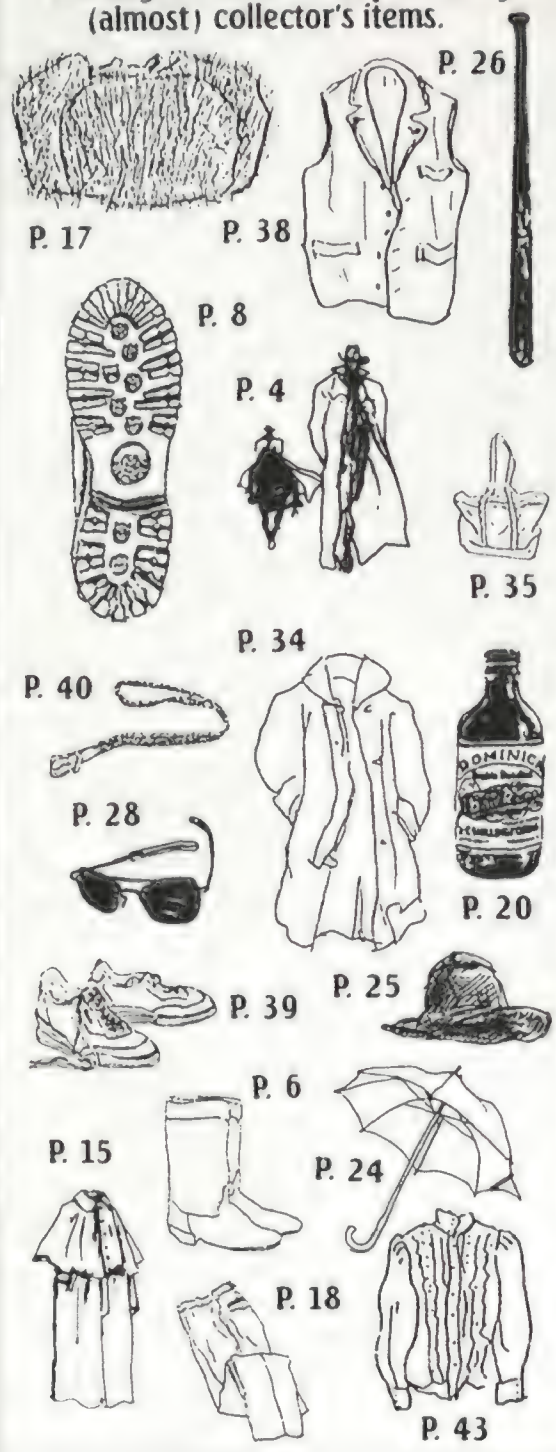

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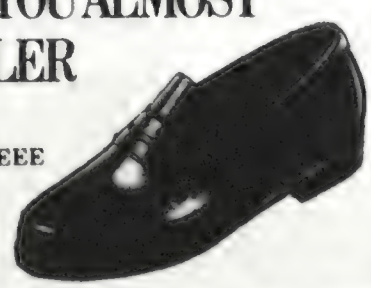

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Additional reading

Sea turtles (p. 44)

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Turtles: Extinction or Survival? by Sarah R. Riedman and Ross Witham, Harper & Row Junior Books, 1974

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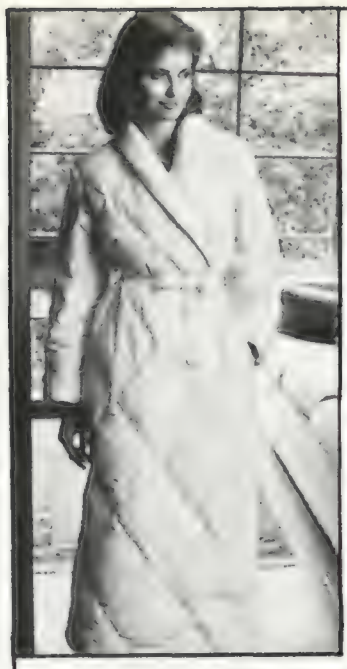

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The Ancient Maya by Sylvanus Morley, George Brainerd and Robert Sharer, Stanford University Press, 1983

The Blood of Kings: Dynasty and Ritual in Maya Art by Linda Schele and Mary Ellen Miller, Kimbell Art Museum (Fort Worth, Texas), 1986

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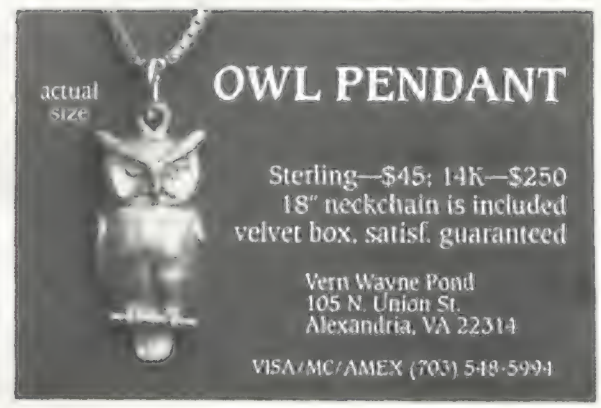

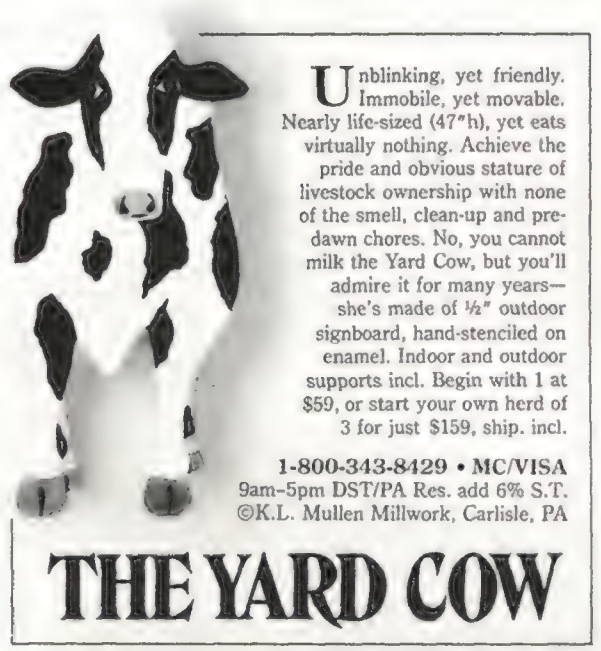
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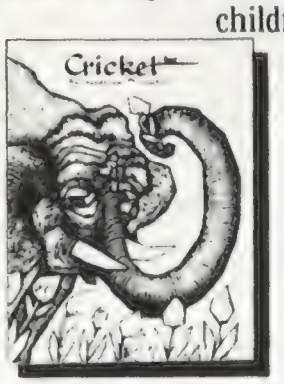

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Castle reopens, Freer remains closed

The Castle has reopened with a new Smithsonian Information Center and Associates' Lounge. Hours are 9 A.M.-5:30 P.M. daily. The Freer Gallery of Art is closed until 1992.

Special holiday events

Festivities throughout the Mall herald the season. The National Museum of American History presents its annual Holiday Celebration, featuring concerts, storytelling, and craft and food demonstrations, December 26-31, noon to 4 P.M. daily. The NMAH Christmas trees are also on view, December 15 until mid-January. For information, call 357-2700.

Special December exhibits and events

National Museum of Natural History
Nomads: Masters of the Eurasian Steppe (through February 18) Landmark exhibition featuring more than 1,000 nomadic artifacts from the major Soviet Union museums. See *Highlights continued*, page 188.
The First Egyptians (December 8-April 1) The first major show to explore the world of predynastic Egypt.

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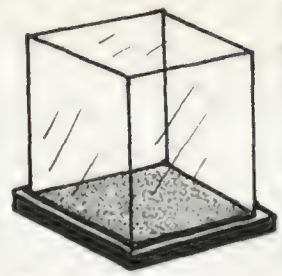

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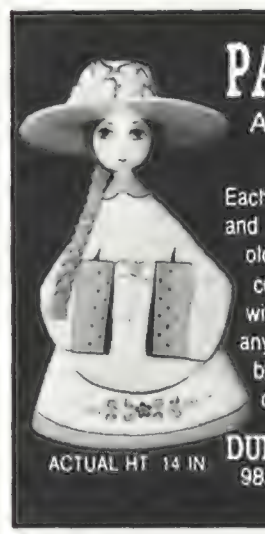

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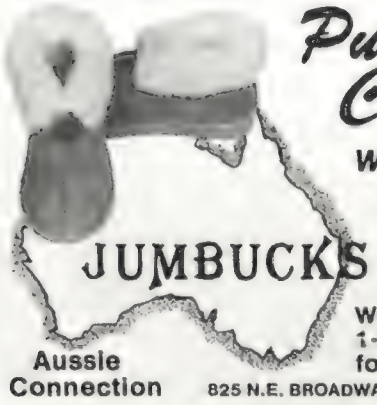

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National Museum of African Art
Icons: Ideals and Power in the Art of Africa (through September 3) A survey of African art, focusing on recurrent themes.
The Essential Gourd (through January 4) Northern Nigerian decorative techniques, traditional and contemporary.

Renwick Gallery
Masterworks of Louis Comfort Tiffany (through March 4) Sixty-two objects, including leaded-glass windows, ceramics, bronzes and paintings.
Slave Quilts from the Ante-Bellum South (through January 1) Thirty quilts, most never before exhibited.

International Gallery, S. Dillon Ripley Center
Caribbean Festival Arts (through February 15) Costumes, music, videotapes, photographs, evoke the sights and sounds of the Caribbean street festival.

National Museum of American Art
Treasures of American Folk Art from the Abby Aldrich Rockefeller Folk Art Center (through February 19) More than 180 objects, paintings to pottery and quilts.
The Patricia and Phillip Frost Collection: American Abstraction 1930-1945 (through February 11) Seventy-five works by members of the pioneering American Abstract Artists group.

Arthur M. Sackler Gallery
India Along the Ganges: Photographs by Raghubir Singh (through April 15) Fifty dye-transfer prints by the acclaimed photographer.
The Noble Path: Buddhist Art of South Asia and Tibet (through March 31) More than 100 objects reflecting the changing imagery of Buddhism.

National Portrait Gallery
Portraits of the Law (through January 15) Images of distinguished judges, scholars and courtroom lawyers.
To Color America: Portraits by Winold Reiss (through April 1) The German-born modernist's 1920s and '30s depictions of American minorities.
The "Edgehill" Portrait of Thomas Jefferson (through 1992) The painting by Gilbert Stuart, on view for three years.

Hirshhorn Museum & Sculpture Garden
Francis Bacon (through January 7) Sixty works, celebrating the 80th birthday of the British painter.

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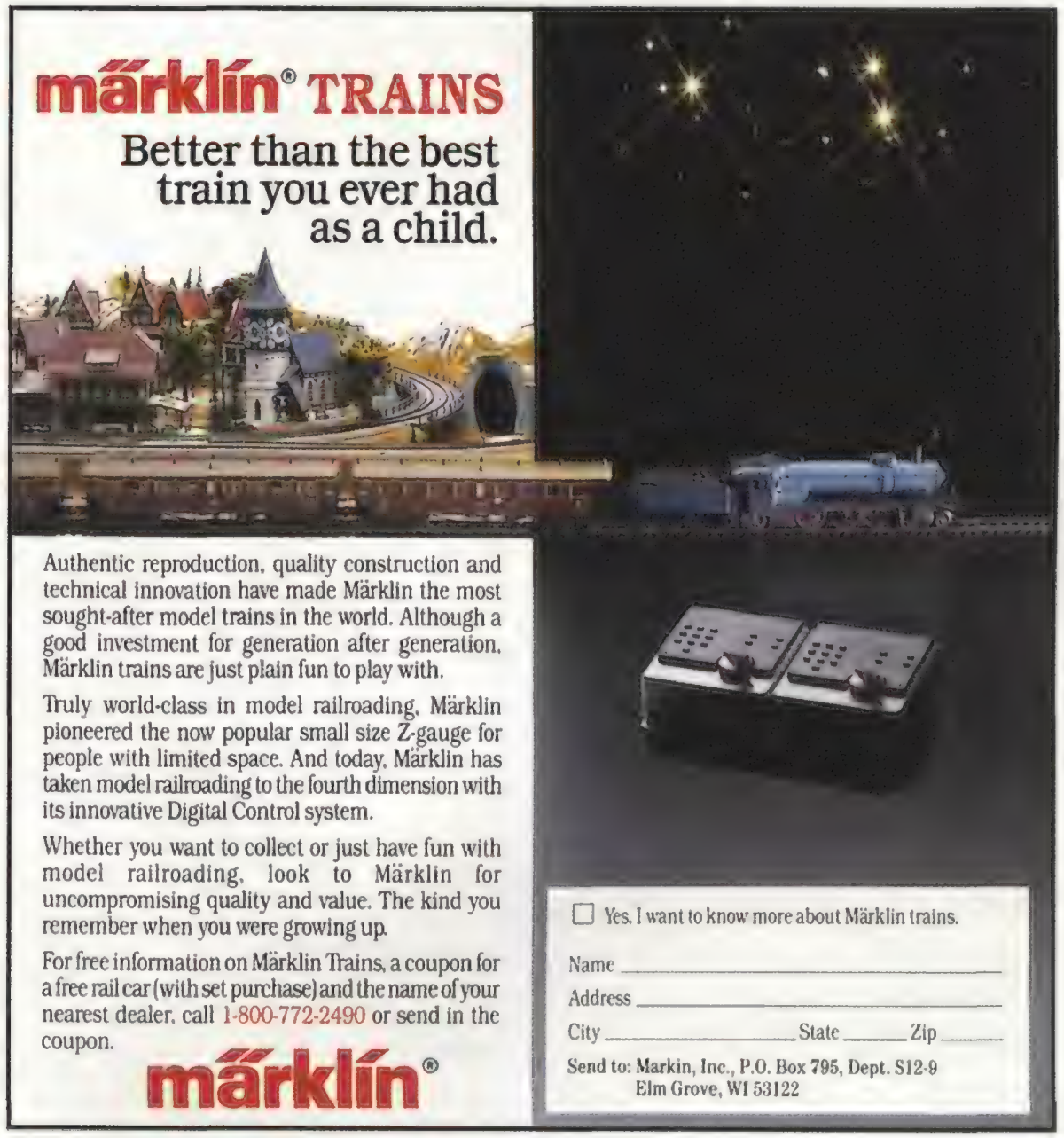
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DIRECTIONS: Susan Solano (through February 11) Works by the Barcelona sculptor.
Matt Mullican: WORKS (December 6-March 11) A rug by the New York artist.

National Museum of American History
Workers and Managers: The Crises of Control in American Manufacturing (through February 1990) Labor history seen through photographs and artifacts.
European Shawls (indefinite) Nineteenth-century wraps from the museum's Division of Textiles.
Men and Women: A History of Costume, Gender and Power (through December 1990) An examination of culturally determined standards of appearance and behavior.
American Television from the Fair to the Family, 1939-1989 (through April) Artifacts tracing the rise of television in American culture.
The Ceremonial Court Permanent installation re-creates White House spaces from 1902 to the present.

National Air and Space Museum
Commuting in the Modern Manner: The Grumman Goose Amphibian (indefinite) A look back at the 1930s "limousine of the air."
The Aviation Careers of Igor Sikorsky (indefinite) An overview of the aviation pioneer's achievements and innovations, with photographs and models.
Carrier War in the Pacific New permanent exhibit brings alive six major battles through models, maps, photographs, films.
Eyewitness to Apollo 11 (through December 31) Paintings, drawings and prints interpreting the moon-landing mission.
Beyond the Limits: Flight Enters the Computer Age A major new gallery explores the computer revolution in aerospace.

Cooper-Hewitt Museum (New York)
E. McKnight Kauffer: Graphic Art and Theater Design (through April 1) Retrospective look at the graphic designer's varied and productive career.
The Intimate World of Alexander Calder (through March 11) More than 300 whimsical works, from toys to caricatures.

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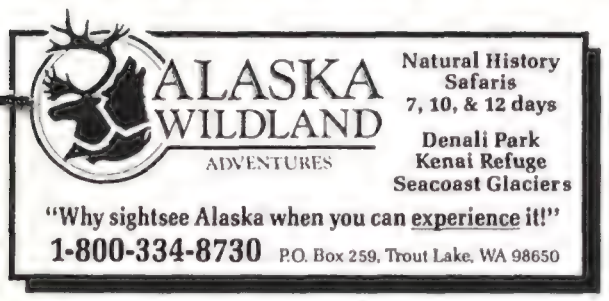
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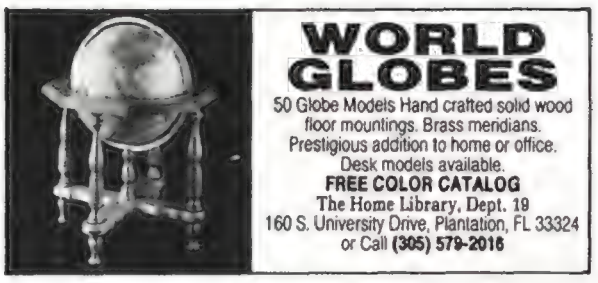
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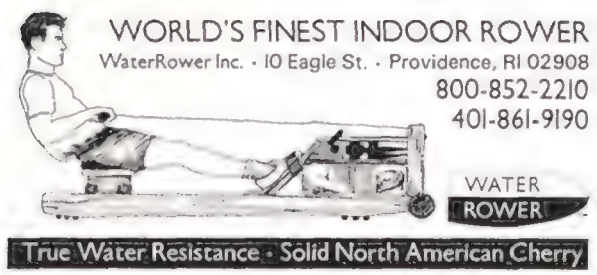
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Smithsonian on the air

Radio Smithsonian: Features include stories on Buddhist art and songwriter Charles Strouse.
Here at the Smithsonian: Three-minute TV spots take you behind the scenes. To find out what stations in your area carry these radio and TV programs, write: Office of Telecommunications, MAH Room BB40, Washington, D.C. 20560.

Resident Associate Program

To become a Resident Associate, or for fee and ticket information, call 357-3030.
Paris/New York: Art Capitals of Our Century (December 9; 10 A.M.-5 P.M.) Seminar by artist-writer Claude Marks.
We'll Sing a Song Together (December 2; 2-3 P.M.) Ella Jenkins' spirited songs for children.
The Washington Guitar Quintet (December 10; 7:30 P.M.) The renowned ensemble.

Smithsonian Institution Traveling Exhibition Service

SITES organizes and circulates exhibitions to cities throughout the United States and abroad. To sponsor a show in your community, write SITES, Smithsonian, Washington, D.C. 20560. Here are some December exhibits:
Flint, Michigan (December 24-February 28) *Threadworks: Miniature Textile Art*, Flint Institute of Arts.
Mobile, Alabama (December 9-March 4) *Soundtracks*, Exploreum.
New London, Connecticut (December 16-January 14) *Art of Botany*, Thames Science Center.
Oklahoma City, Oklahoma (December 23-February 18) *ZooArk*, Omniplex Science Museum.
Santa Clara, California (December 9-January 21) *Drawings by Utagawa Kuniyoshi*, Triton Museum of Art.

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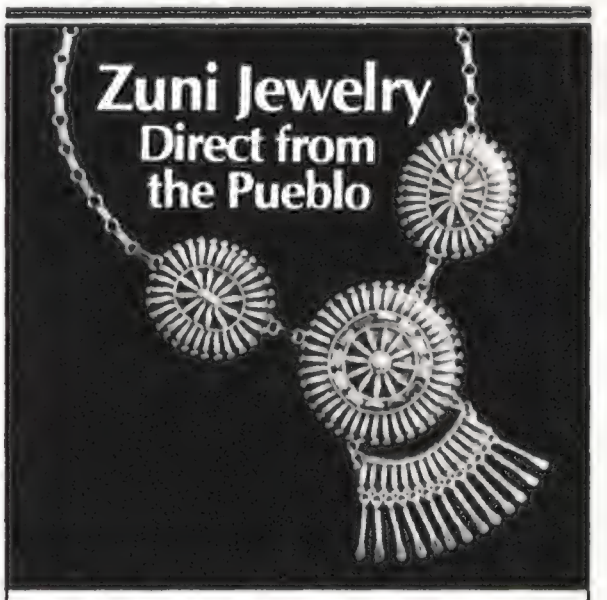

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Ornate treasures from the steppe

In 1718, Peter the Great issued a decree mandating the collection of rare artifacts—"everything that is very old and unusual"—from the farthest reaches of his Russian empire. Among the treasures dispatched to St. Petersburg for the czar's Museum of Anthropology and Ethnography was a trove of objects worked in gold that had been taken from sites in Siberia.

The Scythian ornaments and weapons delivered to the czar were some of the first remnants of nomadic cultures to be treasured and catalogued in Russia. Today, Soviet museums and research institutes contain priceless collections of objects fashioned by nomadic peoples over three millennia. "Nomads: Masters of the Eurasian Steppe," at the National Museum of Natural History, features more than 1,000 artifacts from regions that stretch from the northern shores of the Black Sea to Mongolia.

Organized jointly by the Academy of Sciences of the USSR and the Natural History Museum of Los Angeles County, the landmark exhibition showcases gold ornaments, armor, textiles, domestic utensils, jewelry and musical instruments, on view for the first time outside the Soviet Union.

The show continues at NMNH through February 18, 1990.

Kathleen M. Burke

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Master silversmith fashioned patterned bowl for his high-born Mongol-Tatar patron, c. 1300.

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The Smithsonian Traveler

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Domestic Study Tours

Hawaii *February 3-13 or February 24-March 6* Nature tour of Oahu, Hawaii and Maui.

NEW **Birds of South Texas** *February 17-24* Enjoy warm, sunny days while learning birding techniques at several wildlife refuges.

NEW **New Orleans-Natchez** *March 4-11* Visit plantations and gardens.

Death Valley *March 12-21* Mountains and canyons of the Mojave Desert.

Big Bend, Texas *March 21-30* Hike this wild scenic park; visit McDonald Observatory.

Charleston-Savannah *March 24-April 2* Historic homes and gardens.

Grand Canyon Weekend *April 5-8, April 26-29 or May 3-6*

Arizona in Spring *April 18-26 or April 25-May 3* Cacti and wildflowers in bloom from the Sonoran Desert to the Chiricahua Mountains.

Spring Gardens *April 26-May 3* Study historic gardens in Washington, D.C. and the Delaware Valley.

Okefenokee *May 1-6* Canoe in a wildlife refuge; for novice or expert.

Bryce, Zion and the North Rim *May 10-19*

Southwest Indians *May 19-29* Features Hopi and Navajo cultures; includes Mesa Verde and Monument Valley.

Arches and Canyonlands *May* Easy hiking in Utah.

New York City *May-June* Enjoy a weekend of walking tours, museums and theater. Choose to focus on Art Deco, or Architecture—Cast Iron to Post-Modern.

Chicago Art and Architecture *June 13-17*

Alaskan Landscapes *June 21-July 3 or July 26-August 7* Float down the Kenai River; visit Nome; hike in Denali National Park.

Foreign Study Tours

NEW **Winter Interludes** Uncrowded museums, cultural events and leisurely exploration in Paris, London, Venice, Vienna, Barcelona, Lisbon, Prague or Kyoto.

Mesoamerican Study Programs *January-March* Archaeological treasures of the Yucatán, El Tajín, Guatemala or Oaxaca.

Siberian Winter Odyssey *January 10-27* Includes Moscow and Leningrad.

South American Voyage *January 17-February 4* Around the Horn on the *Seabourn Spirit.*

Caribbean Cruise *January 18-27* Aboard the *Sea Cloud*, sail the leeward islands.

Leningrad Arts *January 28-February 10* Fine and decorative arts, superb museums and imperial residences.

European Countryside Programs *February-October* Relax in scenic and historic areas of Austria, Denmark, England, France, Greece, Hungary, Italy or Wales.

Australia-New Zealand *February 4-25* Natural and cultural history.

NEW **Far East Express** *February 7-27* Singapore, Malaysia, Thailand by train.

Performing Arts of Russia *February 23-March 9* See the Kirov and Bolshoi ballets.

Red Sea Passage *February 28-March 12* Egypt and Jordan including Luxor, Cairo and Petra.

NEW **Trinidad and Tobago** *March 3-13* A birder's paradise in the West Indies.

Costa Rica *March 4-17* Learn about flora, birds and other wildlife in the tropics.

India Arts and Crafts *March 8-April 4* Focus on village artisans, local crafts.

Budapest Music *March 14-25* International performances, museum visits, excursions.

NEW **Jamaica** *March 17-27* Culture and customs of this West Indian island.

NEW **Dakar (Senegal)** *March 17-31* History, culture and arts in West Africa.

Sea of Cortés *March 18-25* Cruise Mexico's Gulf of California—blue whales, wildlife.

British Theatre *March 22-April 1* Attend traditional and avant-garde productions, meet performers backstage.

NEW **Van Gogh Centennial** *April 20-May 5* Van Gogh in Amsterdam, Paris and Arles.

NEW **Egypt and the Nile** *April 24-May 11*

NEW **Morocco Treasures** *April 28-May 12* Casablanca, Fès, Marrakech and more.

NEW **Southern Italy and Sicily** *April 28-May 13* Culture, art and history.

Zimbabwe-Botswana *May 8-25* Includes Victoria Falls and Okavango Delta.

Istanbul and Beyond *May 9-24*

NEW **English Gardens** *May 12-25*

Two Chinas *May 20-June 2* Includes Hong Kong and Taiwan.

Brazil Parks *May 23-June 8* Also visit São Paulo, Rio de Janeiro, Manaus.

Spring Voyage *May 24-June 7* Cruise from Seville to Southampton.

Danube Voyage *May 27-June 12* Art and history from Romania to West Germany.

Smithsonian Seminars

Explore diverse topics in depth with top scholars during classroom study and tours.

Air Power and the Battle of Britain *January 16-19* Washington, D.C.

Icons: Ideals and Power in African Art *January 17-19* Washington, D.C.

Explorations in Marine Biology *February 4-8* Fort Pierce, Florida. Study with scientists at the Smithsonian research station on Florida's east coast.

America's Future in Space: Manned or Unmanned? *March 12-15* Washington, D.C. Includes Goddard Space Flight Center.

American Coins and Currency *March 20-23* Washington, D.C. Study with experts at the National Numismatic Collection.

Animal Communication *April 2-5* Washington, D.C. Observe and learn with experts at the National Zoo.

Write to Smithsonian National Associate Program, Washington, DC 20560 or call (202) 357-4700 for tour and seminar brochures.

SMITHSONIAN-STYLE

America's Art *April 24-27* Washington, D.C. Survey 19th-century masterpieces with art historian William Kloss.

20th-Century Furniture *April 30-May 4* Washington, D.C. Includes visits to working studios and private collections.

The New Astronomies *May 13-18 or May 20-25* Arizona. Study with astronomers at the Smithsonian's Whipple Observatory. Visit Kitt Peak.

Masterpieces of French Impressionism *May 18-20* Washington, D.C. See special exhibitions at the National Gallery of Art.

Florence *May 26-June 10* Classes and excursions based in a villa-hotel.

Research Expeditions

Contribute your time, talent and financial resources to Smithsonian research. Work with curators at the Smithsonian or at field sites around the country and the world.

Cancún, Mexico *February 16-26 or February 27-March 9* Study birdlife and vegetation.

Washington, D.C. *March 4-16 or July 22-August 4* Archive historic aviation documents at the Air and Space Museum.

Costa Rica *March 31-April 12 or April 14-26* Monitor Arenal Volcano's eruptions and study their effect on surrounding rain forest vegetation.

Washington, D.C. *May 23-June 6* Photodocument Memorial Day activities.

Washington, D.C. *June 6-16* Prepare anthropology collections of animal bones for transfer to a new facility.

Washington, D.C. *June 25-July 8* Photograph the Festival of American Folklife.

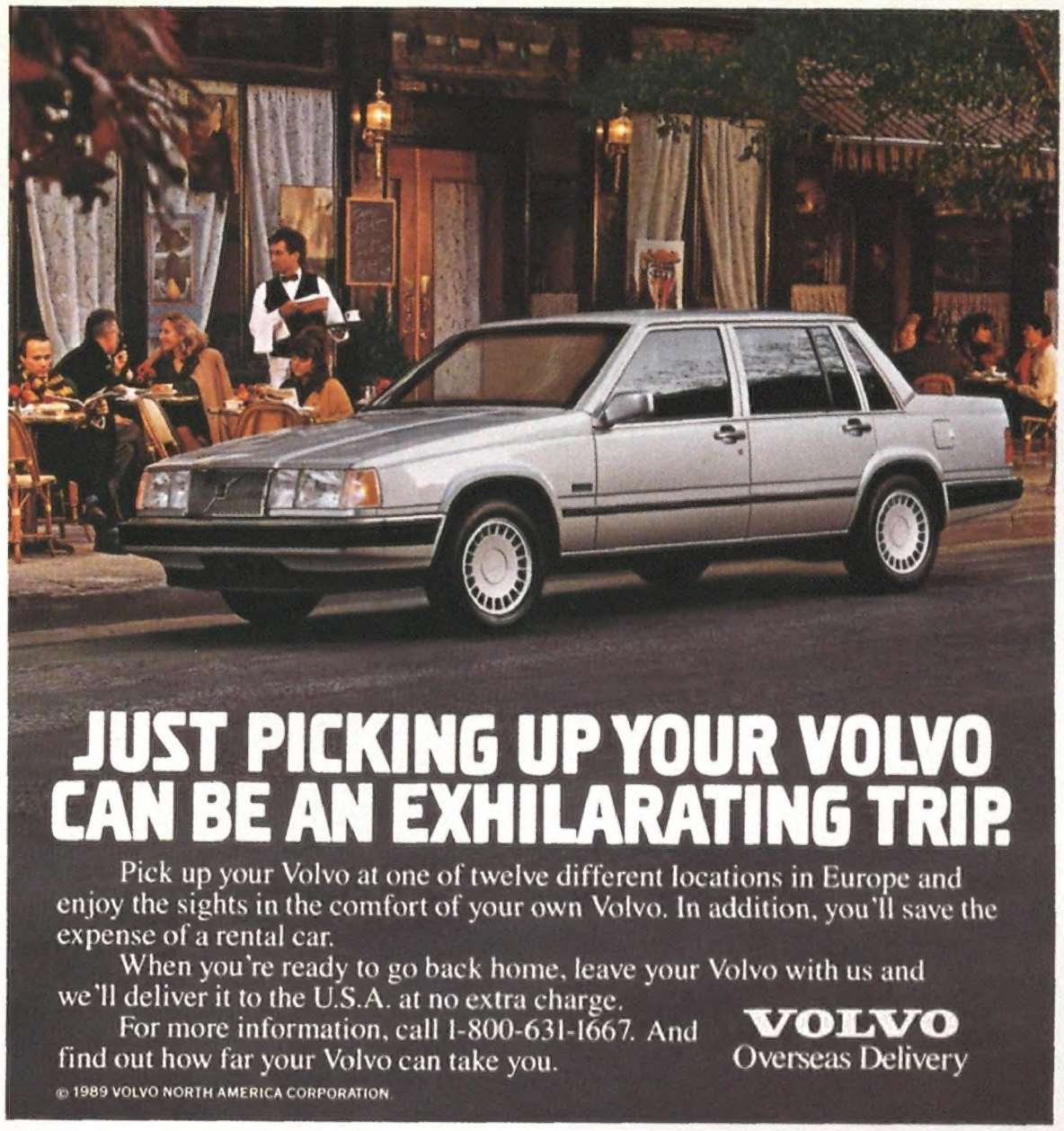
Montserrat *July 1-14, 15-28 or July 29-August 11* Excavate slave quarters and a cemetery at a Caribbean sugar plantation.

Cody, Wyoming *July 15-28* Collect plant fossils near Yellowstone.

Cheyenne, Wyoming *July 18-30* Document the annual Frontier Days celebration.

New York City *August 8-18, 20-30* Reconstruct pottery from the Caribbean.

(202) 357-1350 for expedition brochures.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By Michael Kernan

Fit only for the fire: the Adirondack chair

They are actually bringing back the Adirondack chair.

Not only is it showing up at your more elegant outdoor furniture stores alongside the yacht chairs and swimming pool loungers, but I now see it in some of our mail-order catalogs.

I used to like reading those catalogs when they sold rubber shoes and gray wool shirts. You kind of felt you knew those people. They looked like good company on a week's backpacking hike in the woods.

Now they are selling camp mattresses (camp mattresses!) and little brandy snifter sets with candles (presumably so you can sit before the campfire in your black tie and warm your brandy, which is not only effete but a capital crime against decent brandy). And, I fear, Adirondack chairs.

The chairs are billed—you knew they would be—as "classics" that bring back the great days of the turn-of-the-century Adirondack resorts. They are made of oak and "can be painted."

It is quite beside the point that those marvelous old lodges with their wraparound porches were filled with, not Adirondack chairs, but wonderful handmade furniture, crafted (by hatchet, it looked like) from birch boughs varnished until the bark turned brown.

Many folks love them, but personally I cannot imagine what would possess even the most yuppie-crazed merchandiser to bring back the Adirondack chair. They weigh about a ton, so you can't take them up on the porch to paint them in the spring, which means you paint them where they stand on the lawn, lifting up their feet to put newspapers underneath. Which means that for the rest of the summer they have little shoes of torn newspaper painted white or green, except where spears of grass got in the way.

Lifting up their feet, I said. That's another thing. Their so-called feet are sawed-off one-by-six boards with raw edges that sink into your lawn like giant chisels. I know because I was the one who had to rearrange the chairs for my mother's lawn parties. If you wanted to pull your chair up close to someone, you had to stand, turn around, grab it with both hands and yank, ripping up telltale parallel divots in the turf.

When you sat in them you slid straight back until the front of the seat (another raw-edged board) hit you just below the knees. Your spine was forced straight up and out by the most unforgiving chairback this side of Louis XVI. Furthermore, the chair's generously broad arms were slanted down to the headrest. The instant you put a wet iced-tea glass down, it would slide toward you, aiming to dump ice cubes in your lap.

I rarely sat in our Adirondack chairs at those parties. For one thing, I was expected to serve canapés and the trays of iced tea, and fetch people's shawls and so forth. For another, well, step back with me now into my pleasant, country childhood deep in upstate New York. It is a lovely July afternoon, and my mother is having a party, for which I have mowed the lawn somewhat more carefully than usual. Normally I would mow it at a dead run against the clock. My best time was 59 minutes, but I did tend to leave little Mohawk scalp locks here and there.

A lady whom I had better call Mrs. Quist was the first to arrive. She was, I would say, six feet two, with a jaw like a steam shovel, and she took over upon arrival, making proclamations in her ringing baritone and chomping sandwiches with her enormous teeth, which she exposed to the gum at each bite.

Mrs. Quist had once lived in the South of France and liked to instruct us in the ways of the Old Country. She told us to hang our killed chickens until the neck rotted through before cooking them. We tried it once. Hung a Sunday chicken in the cold cellar for four days. It drove our dog Napoleon almost out of his mind, and he splintered his nails trying to dig through the cement floor under the cellar door. The chicken tasted fine, I must say, but the suspense was too much for us all, including Napoleon.

Now, at this party there was another guest, a Mrs. Toynbee, one of *the* Toynbees she had subtly let us know, who had also lived in the South of France. Mrs. Toynbee and Mrs. Quist, both sitting in Adirondack chairs, started discussing their old home. Voices grew sharp, large hands gripped those slanting chair arms, sturdy bodies pushed hard against chairbacks.

"You must come by and see my collection of early Quimper pottery," Mrs. Quist would say, pronouncing it "Campere."

"Oh dear me," replied Mrs. Toynbee, "we keep our Quimper [pronouncing it "Campere" but with an extra-French, strangulated "r"] in the kitchen. Just a bit too quaint, *n'est-ce pas*?"

In the end it was Mrs. Quist who announced that she had to be going. The only trouble was, she couldn't. She had sunk so far into the chair that her feet were off the ground and she might as well have been stuffed rear-first into a barrel. My father and I got her out, each pulling on a beringed hand.

Mrs. Toynbee gave her gracious little smile—and tried to get up. She hadn't had the sense to wait for Mrs. Quist to leave. It took three of us, because Mrs. Toynbee was as solidly built as an Adirondack chair. I inherited both chairs when I got married, and I used them for kindling that same winter. They burned pretty good.

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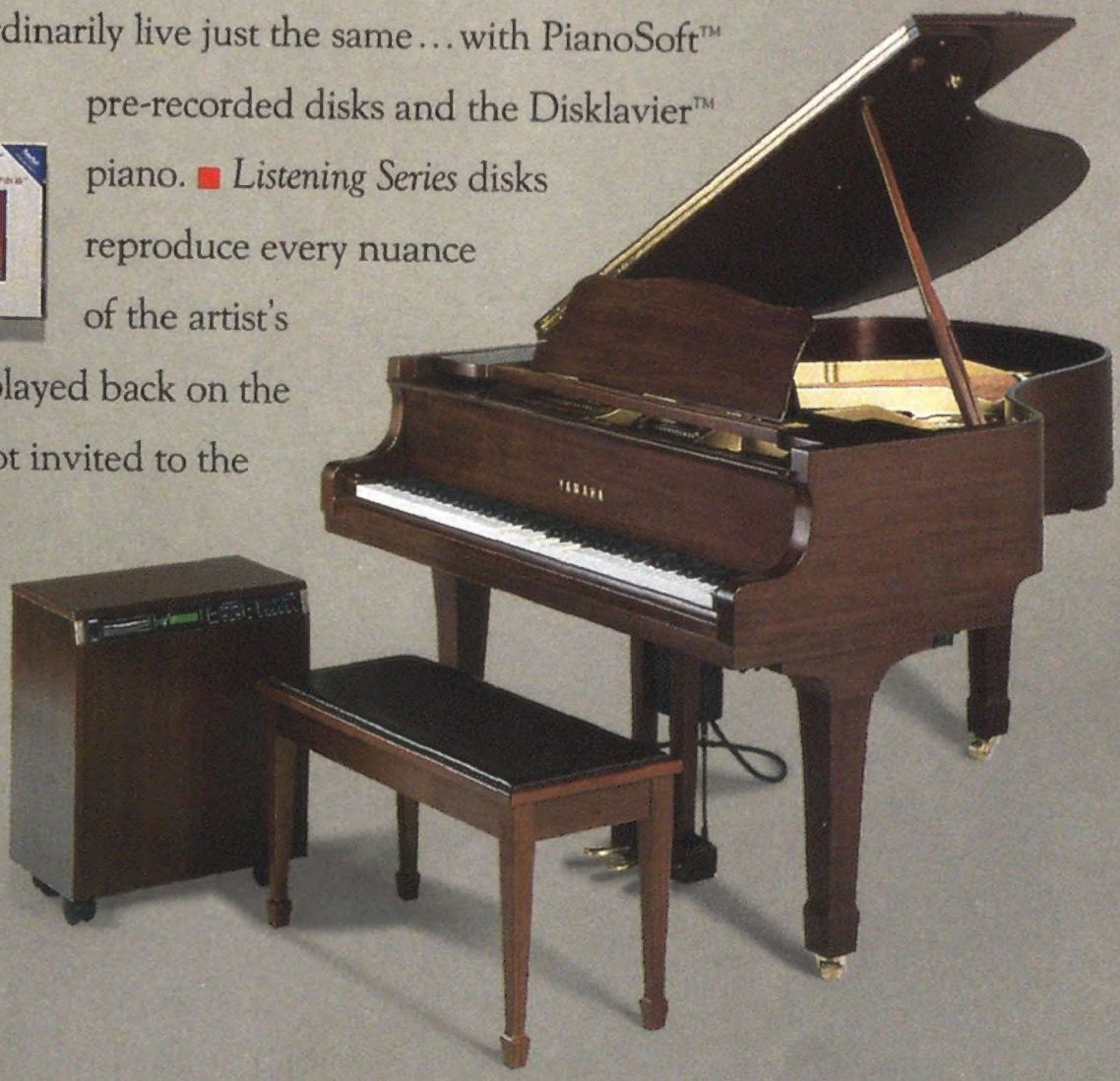

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